

AMERICAN ARTISAN and Hardware Record

Vol. 84. No. 1.

620 SOUTH MICHIGAN AVENUE, CHICAGO, JULY 1, 1922.

\$2.00 Per Year.

Manufacturers of the Largest Line of Eave Trough, Conductor Pipe and Trimmings in the U. S. Capacity 30,000,000 feet annually

ALSO MANUFACTURERS OF ALL STYLES OF

ROOFING



The Most Perfect Conductor Pipe



Fig. 4



DOUBLE CROSS LOCK



Fig. 1

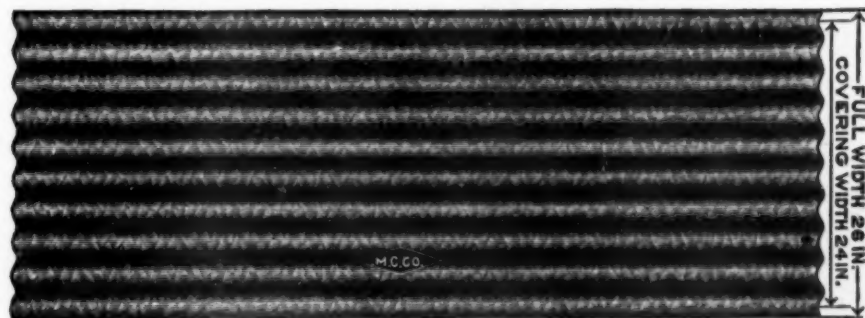


Fig. 2



Fig. 3

**Fire,
Storm
and
Lightning
Proof**



—And, there's a nice profit in it for you!

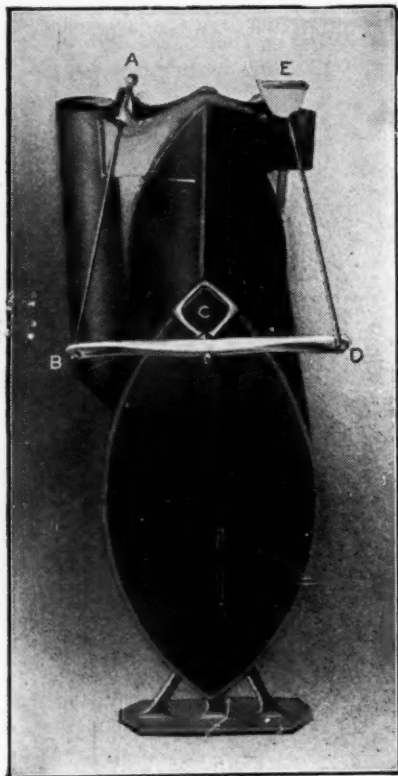
Write for Circulars and Prices.

Milwaukee Corrugating Co.
MILWAUKEE

Branch Factory and Office at Kansas City, Mo.
Minneapolis Sales Office, 929-30 Lumber Exchange



FarQuar Automatic Control —and What It Means



One of the first questions a home-owner should ask about a heating system is—"Does it control the fire easily and successfully?"

In other words, do the drafts operate automatically and help to economize fuel?

The answer is a positive "YES!" with—

THE FARQUAR HEATING AND VENTILATING SYSTEM

The expansion and contraction of the FarQuar one-piece firebox,—electrically seamless-welded to make it gas and air-tight,—is the actuating force of the FarQuar Automatic Control. A cold frame is fitted around the firebox outside the casing (shown in illustration at left), and so adjusted that the slightest variation of temperature

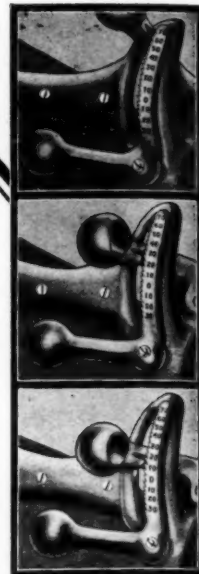
causes the governor arm to automatically open and close the draft and doors.

The result is a complete control of the fire, giving uniform temperature with only once-a-day firing. No springs or batteries to get out of order. The desired temperature is obtained merely by setting the simple device shown at the right.

The FarQuar is the only heating system made possessing these exclusive features. Other distinctive FarQuar features are described in our free booklet. Write for it. Dealers should ask about the FarQuar Franchise for their territory. It carries a decidedly profitable advantage for them.

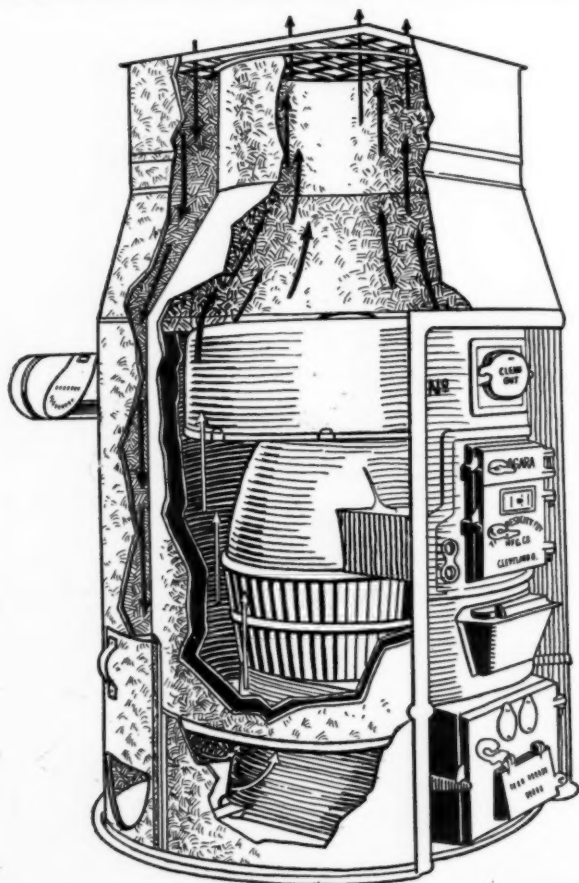
The Farquhar Furnace Co.

207 FarQuar Building
Wilmington, Ohio



Exclusive
"FARQUAR"
Features
and
What They Mean

Electrically Welded
One-Piece Steel Fire-Box
Positively prevents con-
tamination of air by
gases or fire poisons.
Storage Fire-Box with large
grate area insures slow combustion and fuel efficiency.
Vent and Return System. Provides a generous supply
of gently warmed, pure, fresh air instead of a hot
blast of super-heated air.
Automatic Regulator actuated by fire-box, completely
controls fire, insuring uniform temperature regardless
of weather, with surprisingly low fuel consumption.



NIAGARA PIPELESS FURNACES

Saves one-third of the fuel.

A super-heater.

Burns any kind of fuel.

*Durable, efficient, and
more than economical.*

Write for catalogs, prices and terms.

Made by

**THE FOREST CITY FOUNDRY
& MANUFACTURING CO.**

1220 Main Avenue

Cleveland, Ohio

*One of the oldest manufacturers
of furnaces in the United States.*

Founded 1880 by Daniel Stern

Thoroughly Covers
the Hardware, Stove,
Sheet Metal, and
Warm Air Heating and
Ventilating Interests

AMERICAN ARTISAN and Hardware Record

Address all communications
and remittances to
AMERICAN ARTISAN
AND
HARDWARE RECORD
620 South Michigan Avenue
CHICAGO, ILLINOIS

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Vol. 84. No. 1.

CHICAGO, JULY 1, 1922.

\$2.00 Per Year.

BUY NOW FOR PROSPEROUS FALL BUSINESS.

According to the 1920 census, the population of the ten middle western states—Ohio, Michigan, Indiana, Illinois, Wisconsin, Iowa, Nebraska, Missouri and Kansas—amounted to nearly 33 million people, or less than 31 per cent of the total population of the United States.

Reliable data also show that these ten states produced during 1921:

48 per cent of the wheat,

65 per cent of the oats,

53 per cent of the corn,

41 per cent of the hay

of all that were grown of these crops in the entire United States.

Farm property in the ten states shows a percentage of 55 of the total value of farm property in the United States.

In other words—

The ten central western states, where American Artisan and Hardware Record has the bulk of its circulation, are favored by having a greater number of farm owners who, because of their diversified methods of opera-

Furthermore, the proportion of towns and cities ranging from 1,000 to 25,000 in population is larger in these ten states than in the rest of the country—and it is in cities and towns of this class that the hardware merchant has shown the greatest strides.

In the great majority of cases the hardware merchant in these cities and towns also conducts a sheet metal shop and installs warm

air furnaces.

All of this is simply a reminder to the retail hardware merchant of the central west that he is more fortunately situated than his brother merchants in other portions of the United States, and that therefore, with the great crops which are now being harvested, and with the better prices which the farmers are receiving for their grain and live stock, he should prepare for a big, prosperous business during the coming Fall.

There are signs already which indicate a positive shortage of goods in the near future on many lines. The manufacturers have naturally held back because most retailers did not place advance orders during the period just past, and it behooves the merchant who has not yet provided for a fair amount of sales by purchasing a reasonable supply to set to work at once and fill the holes in his stock.

The advertising columns of American Artisan and Hardware Record contain offerings of seasonable merchandise at fair prices and judging from letters received recently from manufacturers, these offerings are meeting with pleasing returns in the shape of good sized orders.

Other manufacturers who are in position to satisfy the needs of the hardware merchants of the great Central West—the most prosperous portion of the United States—will find that money invested in advertising in American Artisan and Hardware Record will give fine returns right now.

Random Notes and Sketches.

By Sidney Arnold

I HAVE stopped at a goodly number of hotels in my travels and have found some with excellent service rendered in a manner to make you feel "at home" as much as is possible when away from your family.

In Cleveland there is a hotel where I like to stop as often as possible, for at the Hollenden they take care of you in a real, make-you-feel-at-home manner. The bell boy does not wait until you are two steps from the desk before he reaches for your grips, and as for room service, it is prompt and pleasant, so that you actually feel like compensating the boy who brings your ice water or whatever else it may be.

The meals at this excellently managed hotel are of the sort that you are glad to invite your friends to join you. The waiters serve you well without being obtrusive and it does not cost a fortune to get a square meal in any of the dining rooms. If you are economically inclined, there is a cafeteria with very moderate prices and well cooked and much varied foods.

One morning I had to take an early train so I had breakfast at one of these white front places which are supposed to charge "popular" prices. My order was for exactly the same items as I had at the Hollenden. A paper napkin was mine for the picking. The table was one of those shiny white glass affairs, no table cloth. My bill was 65 cents as against 75 cents at the Hollenden.

This will give you an idea of the fairness of the management of the Hollenden.

* * *

Manners vary according to locality, training, and circumstances, remarks George A. Mortensen, vice-president and treasurer of Matthews Banner Range Company, South Bend, Indiana. He relates a case to the point:

It was in the dining room of one of the smaller steamers that travel between Chicago and Duluth.

The few passengers who had the courage to descend from the cheerful deck to the stuffy little dining saloon where a table d'hote meal was being served were hurrying to get through, eager to be out in the open air again.

Suddenly the rattling of dishes in the galley ceased. The chef appeared clad in a none-too-immaculate apron.

"Keep yer knives, everybody," he bellowed warningly, "we're gonna have pie for dessert."

* * *

Repairs in the stove business are handled with the speed of lightning compared with electric repairs in Siam, says Gilbert A. Leiser, sales manager Malleable Iron Range Company, Beaver Dam, Wisconsin.

He tells about a notice which is posted in every room of a Gangkok hotel in various languages. Its English wording runs thus:

"Sir: For the case that your electric light should fail, we beg to send you enclosed a postcard, which please send us at once when you find your light out. The company will then send you another postcard."

* * *

Being firmly convinced of the cleverness of dogs, F. M. Farber of Marshalltown Manufacturing Company, Marshalltown, Iowa, enjoys the following story so much that he hastens to share it with me:

Rastus was arguing with Silas about the relative merits of dogs they had once owned.

"An' dat," concluded Rastus, was a wonnerful houn'! Why, one day he come fooling roun' mah daddy's blacksmith shop an' mah daddy got mad an' chucked a hammer at him, an' dat dawg—yo' know

what he done?—well, he done made a bolt fo' de do'."

"Hmpf!" sneered Silas. "Nuffin' 'tall, nuffin' 'tall! One time Ah throwed a hammer at mah dawg, an' he started makin' tracks fo' de Atlantic Seaboard Railway, an' maybe he's making tracks yet, fo' he sho' was de wonnerfulest dawg!"

* * *

George B. Carr, president Carr Supply Company, Chicago, Illinois, writes me about his fishing trip, as follows:

"Just for fear that you might think that I was four-flushing in regard to catching some nice fish in northern Wisconsin and Minnesota, I am hereby enclosing you a picture. While you may doubt the truth of my catching these fish, the fact remains, however, that it is a mighty nice string of fish anyway, whoever caught it.

"The reason I am not in the picture is that I had to use the kodak myself, as the Indians I was with could not operate it. Just a little inside information, however, if you are interested, I shall be pleased to advise you where these original films can be done as there is a concern up there which supplies these pictures to people who can not produce as good a film."

It would be impossible to reproduce the picture to which Brother Carr refers on account of the size of the fish. In order to show the magnitude and number of the fish which he caught in their true relation, the picture would take up a space ten times the size of this page.

* * *

Send a Smile to Catch a Smile.

I am wondering, my dear,
If you ever chanced to hear
That old proverb, quaint and brief,
"Send a thief to catch a thief?"

Here's another, just as true,
That will mean much more to you,
That will make yor life worth while,
"Send a smile to catch a smile."

One cross word will always find
Other cross words of its kind;
But just send a smile, and then
Watch more smiles troop back again.

So, if you should hear, my dear,
That old proverb, blunt and queer,
Think of one more worth your while,
"Send a smile to catch a smile."

Cultivate Every Square Foot of Your Trade Territory If You Want to Increase Your Stove Sales Volume.

Do Not Let the Weeds of Neglect Choke the Growth of Favorable Impressions Planted by Your Initial Stove Selling Campaign.

CULTIVATE to the full extent the possibilities of your trade territory if you wish to increase the volume of your stove sales.

Analyze what this really means in terms of business.

Suppose that you had a farm of forty acres.

Your harvest returns would be very scant if you planted only ten square feet of crops in every acre.

If, in addition to planting only ten square feet of every one of the forty acres, you did nothing to aid the growth of the crops, you would gather little more than weeds at the end of the season.

Sales grow only as the result of constant attention to their development, just as crops grow only as the result of continuous care and cultivation.

Your trade territory is your field of operation.

How much of it do you cultivate with such excellent implements as the comprehensive mailing list, circular letters, window displays, newspaper advertising, and personal solicitation?

For the sake of illustration, take the four square blocks in which your store is located.

How many people in these four square blocks have old stoves or ranges which are nearing the end of their usefulness?

How many families in the four square blocks can be persuaded to replace old equipment with new and improved stoves and ranges?

In this area of your territory there may be engaged couples who are planning to live somewhere within the four square blocks and to set up housekeeping in the near future.

They will need stoves and ranges.

Will they buy such stoves and ranges outside of your territory at

some department store, or at your establishment?

What are you doing to induce them to trade with you?

If you watch the local newspapers carefully and keep in touch with other sources of neighborhood information, you will be able to get at least 90 per cent of the names and future addresses of the soon-to-be-

PROPERLY directed and continued effort will enable you to get much greater results from your trade territory in the sale of stoves and ranges.

When you start a selling campaign, keep it up from one end of the year to the other. Every season is a stove and range season.

You must keep in touch with prospective customers until the sale is concluded—otherwise, some other dealer or the big department store will gain their attention and hold it to a profitable conclusion.

Attention has a trick of wandering, even in the strongest mind. Try it yourself. How long can you concentrate your thoughts upon a single topic?

If you can think for an entire hour upon one subject without your mind wandering to other topics, you are the greatest genius that the world has ever known.

married couples in your trade district.

Through such channels as your church, lodge, and community society membership, you can get in touch with many of these prospects for personal interviews with regard to requirements for their new homes in the line of stoves, ranges, and other hardware.

The local real estate offices in your trade territory are another

source for information during the weeks preceding the renting seasons, which are usually in May and September.

Here, then, is another way in which you can add to a list of prospective buyers of stoves and ranges.

The more thoroughly you study the sales possibilities of your trade territory, the greater, of course, will be your chances for increasing the volume of your business in stoves and ranges.

Prospects for sales are very much like the prospects for crops.

In other words, they must be intelligently cultivated.

Don't allow the weeds of neglect to choke the favorable impression created by your initial selling campaign.

Have a follow-up system by means of which you keep alive and strengthen the force of your first selling message to new prospective customers.

The first blow of the hammer starts the nail, but it must be driven home by other blows.

Similarly, the first advertisement or circular letter or personal talk starts the customer to thinking in your favor.

But he is likely to lose interest and to forget your selling arguments, if you do not reinforce them by other messages.

One of the helpful agencies toward keeping your stoves and ranges constantly before a considerable percentage of people in your trade territory is the window display.

This does not mean merely putting a stove or range in your window, without anything to tell the story of its advantages.

Call upon your jobber or manufacturer for window posters, cut-outs, illustrated placards, and other

helps toward effective window advertising.

Use the window card and occasionally vary your display with actual demonstrations in your store.

The farmer who allows his plows, harrows, and other implements to rust outdoors between seasons of their use has an unnecessarily heavy overhead expense.

The same holds true of your mailing list.

If you allow it to get out of date, and you fail to add new names as well as new details of information concerning each name on the list, it grows rapidly less in value to you as a medium for increasing sales.

The amount of time that you spend keeping your mailing list alive with useful data concerning each person whose name is catalogued is profitably spent.

In order to convince yourself of this truth, take your mailing list of stove and range prospects right now, begin with the letter "A," and examine the amount of information which you have written on the index card pertaining to the person's name with that letter.

Then ask yourself what you know about this person which is not on the card.

The first name on your list may be the Adams family. That's number so-and-so Blank Street.

Certainly, it will be to your advantage to know that the Adams family have a kitchen range which has been in service fifteen years.

The two elder Adams boys are earning good wages, and the family is well able to afford a better range.

The daughter is engaged to Bill Jones in the next block.

The Adams family do most of their buying at outside big department stores—largely because you have never taken the trouble to prove to them the advantages of trading with home merchant.

By joining your local merchants' association and helping create the community spirit, which will result in keeping a big percentage of trade at home, you will have another means of influencing the Adams

family and the Adams family's oldest daughter to buy at your store.

In a word, constant, intelligent, friendly sales effort is needed to increase your volume of sales of stoves and ranges and other commodities which you carry in stock.

Government Bureau Gives Facts About Mica.

The term mica is probably derived from the Latin "micare," meaning to shine or glitter, the brilliant reflection from mica flakes in rocks having directed more than ordinary attention to this group of minerals, says Serial 2357, issued by U. S. Bureau of Mines.

Mica found as scattered flakes in various types of rock is of no commercial value.

The wide application of sheet mica, particularly in electrical equipment, has placed it among the important minerals of the world.

No satisfactory substitutes for mica are known for its most important uses.

If a sheet of mica is struck a sharp blow with a pointed instrument a series of cracks are formed at angles approaching 60 degrees from each other. This six-rayed star is termed a percussion figure. It is sometimes seen in mica mines when a miner inadvertently strikes a block of mica with a pick.

Mica is commonly found associated with garnet, beryl, tourmaline, cassiterite, columbite, apatite, fluorite, and topaz.

Mica mining is a very uncertain and precarious industry. Mica deposits are rarely of sufficient persistence to justify expensive mining equipment.

Scrap mica, great quantities of which are produced and used in the United States, is worth only about one-seventh as much as sheet mica.

In the latest year for which statistics are available, North Carolina produced 64 per cent of the sheet mica and 49 per cent of the scrap mica mined in the United States.

The principal consuming centers for mica are the large eastern and middlewestern cities, where electri-

cal machinery and appliances, phonographs, lamp chimneys, etc., are manufactured.

About 60 per cent of the ground mica produced in the United States is used in the manufacture of patent roofing; 21 per cent in the manufacture of wall paper; 8 per cent in the making of automobile tires; 3 per cent for fancy paints, concrete facing, and Christmas tree "snow," 3 per cent in molded electrical insulation; 3 per cent in annealing, filling in rubber other than tires, printing, lithography, sizing cotton, etc., and 2 per cent in lubrication compounds.

Oiled paper and compressed paper products have been tried as substitutes for sheet mica in electrical work, but for most uses they are unsatisfactory.

A product obtained from separated milk, and known under various names, has properties that promise to rival natural mica in electrical work.

Mica mining began in Grafton County, New Hampshire, with the opening of the Ruggles mine in 1803. All the mica mined in the United States prior to 1867 was produced from that state.

Mica splittings consist of very thin sheets or films obtained chiefly from pieces too small or too imperfect to be used as sheets. Most mica splittings are made in India, chiefly by women and children, with the use of a small knife or with the thumb nail, which is permitted to grow long for this purpose.

The Ruggles mica mine, in New Hampshire, which has been worked for more than 100 years, has produced several million dollars' worth of mica.

Canada is the chief, and practically the only, source of phlogopite or amber mica at the present time.

A fool is known by six things; anger without cause; speech, without profit; change, without progress enquiry, without object; putting trust in a stranger; and mistaking foes for friends.—Arabian Proverbs.

Events and Progress of the Hardware Trade.

What the Retailers, Jobbers and Manufacturers Are Doing. Latest Selling Methods and Experiences of Successful Men.

Simmons-Winchester Merger Is Announced.

What is probably the largest hardware corporation in the world has been brought into existence through the merger of the Simmons Hardware Company of St. Louis, Missouri, with the Winchester Company of New Haven, Connecticut.

The companies have entered into a contract to combine their interests under a common management and hereafter will be operated jointly.

The Winchester Company, formed in 1919, is itself a combination of a number of companies making arms, sporting goods specialties and hardware, especially pocket knives, kitchen and other cutlery, edge tools, wrenches, etc., of which the best known is the Winchester Repeating Arms Company.

Control of the Simmons Hardware Company, which does an ex-

tensive wholesale hardware business in all parts of the world, has been held by the Associated Simmons Hardware Companies, a voluntary trust formed in 1911 under Massachusetts laws. It reported assets of \$30,000,000.

The combined interests will be operated through a holding company to be known as the Winchester-Simmons Company, the stocks of which are owned by the present interests.

The Winchester Company will be the manufacturing organization and the Associated Simmons Hardware Companies the distributing bodies.

The latter companies have warehouses in St. Louis, Wichita, Sioux City, Minneapolis, Toledo, Los Angeles and Boston and Philadelphia.

The Winchester Company and its subsidiaries have warehouses in New Haven, San Francisco, Los Angeles, Kansas City, Atlanta and Chicago.

store.

"Besides our newspaper advertising we make use of all the circulars, booklets, etc., that these manufacturers furnish us, enclosing one or more with each monthly letter that we send to people on our mailing list. Simply having these fine booklets lying around on your counters, for customers to pick up is not making proper use of these selling helps which are prepared with great expense by the manufacturers. Get them out to your people where they will do some real selling for you.

"Our mailing list is classified very thoroughly, and we have a card file with the name of every customer and prospect, his address, financial condition and other items of interest from a credit or selling view noted thereon. This file is 'cross-indexed,' so that with very little effort we can select all those who are interested in electrical supplies, or ranges, or warm air furnaces, etc.

"We use an addressing machine which makes short work of getting envelopes or post cards ready for mailing. This machine has paid for itself many times, because frequently it is necessary to get out an announcement quickly in order to pull sales over before a price change or for some other reason.

"As I mentioned before, we do not over-emphasize the 'bargain' offer, but we make it very clear to our people that they buy from us to better advantage, and we have some advertising during the past years along the line of providing to the consumer that our prices are lower in comparison with the cost of many other commodities—that hardware prices are 'in front,' so far as reductions from peak figures are concerned.

"For example, we published last October a statement showing that

Chandler Takes Bull by the Horn and Talks Turkey to Consumers.

Ohio Hardware Merchant Discusses Retail Prices in Comparison with Other Commodities.

"JUST the fact that a concern has been in existence for thirty-odd years and has made money is no reason why it should not advertise," says R. A. Chandler, of the Chandler Hardware Company, Sylvania, Ohio. "In fact, that is one of the very best reasons for regular, consistent advertising, for there will then be a real, sound basis, other than the much abused 'bargain' offering for the advertising.

"We offer 'unusual advantages' to our customers in our prices, but we do not over-emphasize the 'bargain' features, stressing rather the quality and service we furnish.

"And in our advertising we make it a point to give preference to lines which are advertised by the manufacturers. This year, for example, we shall concentrate our effort on about fifteen lines of that kind, such as Majestic warm air furnaces, Red Star oil stoves, Majestic and Favorite ranges, American fence, Hoover vacuum cleaners, etc.

"We feel that by doing this we shall tie up very effectively with the national advertising done by the manufacturers of these goods and thus cash in on their efforts to much greater advantage than if we just display their wares in our

on 25 items, picked at random, and representative of all lines of hardware, we showed a reduction of more than 27 per cent. In other words, that our prices in October, 1921, had gone back more than half

tomer than our prices were fair."

The statement is quoted herewith:

Why Pick On Us?

"The woods are full of amateur economists who claim that the price

"When Steel freights from Pittsburgh, now 33 cents, are back at 15 cents a hundred.

"When Hardware freight from St. Louis, now 71 cents, are back at 35 cents a hundred.

"When Street car fares are back at a nickel.

"When Hard Coal is back to \$9.00 a ton.

"When Railroad fares are back at 2 cents a mile.

"When a modern house in Sylvania rents for \$12.50 a month.

"When Gasolene is back at 10 cents a gallon.

"When Telephones are back at \$1.00 a month.

"When Farm Labor is back at \$25.00 a month.

"When Skilled labor now \$1.00 to \$1.50 is back at 35 and 45 cents an hour.

"When money is back at 6 per cent.

"When Cooks are back at \$5.00 a week.

"When Haircuts are back at a quarter.

"When Movies are back at a dime.

"When a Car Wash is back at a dollar.

"When Ice Cream is back at 10 cents.

"When a Newspaper is back at a penny.

For the Love of Mike.

"Why expect the manufacturer, wholesaler and retailer to go the route alone? Why expect us and no one else to go back to pre-war prices?

Why Pick On Us?

"Aren't we Americans all in on this proposition? Haven't we got to work it out together? Well then, haven't we, the manufacturers, the wholesalers and retailers, gone much faster and much farther than the average in reducing prices and making readjustments?

We Certainly Have.

"We're ahead—way ahead of the procession. Now let the railroads and the mines and the street cars, and the Standard Oil, and the soft drink parlors, and the landlords, and the hotels, and the restaurants and the draymen and the bankers, and

American
ORIGINAL
& GENUINE Fence

AMERICAN FENCE
MADE BY
AMERICAN STEEL & WIRE COMPANY

Weather Is the Real Test of a Woven Wire Fence

American Fence, the original and genuine, has stood the test of changing weather for 20 years. It yields to contraction and expansion of hot and cold weather. Perfect galvanizing and big heavy wires make it the most durable fence on earth. Full weight. Full size of wire. Full length of rolls.

Look for the sign: American Fence. Made by American Steel & Wire Company.

Thirty three stays to every rod of six-inch fence, no No. 9½ wire in place of 9, a weight of 148 pounds for each rod of 1047-6, not a tenth of an inch shortage in height, and an absolute guarantee as to satisfactory service - all of these and every other feature that goes to make

100% Value

You Get in American Fence

Our prices are lower. No extra charge for delivery. Pay for it on any reasonable terms you desire

The Chandler Hardware Company

SYLVANIA, OHIO

Type of Newspaper Advertisement Published by Chandler Hardware Company.
Tying up with National Advertising of Manufacturer.

of the total advance from pre-war figures.

"When that statement got into the hands of our people and was read, we noticed a very distinct difference in their attitude and trade improved perceptively. It was not nearly so hard to satisfy the cus-

of Hardware, Implements, Stoves. Ranges, Paints, etc., will shortly return to pre-war levels.

Will They?—Yes, They Surely Will.

"When a Square Meal is back at a quarter.

"When Shaves are back at 10 cents.

the barbers, and the coal barons in Congress, and the butcher, and the baker and the candlestick maker catch up with us. It's time for us to pick up somebody.

The Retailer Has Been Made the Goat Ever Since the War Began.

"We are doing our part to get conditions back to normal. To prove it and to enlighten those people who continually insist that prices

1047—6" Fence,		
per rod .....	.85	.65
Gasolene .....	.31	.21
Kerosene .....	.24	.14
Canvas Gloves....	.25	.10
Galvanized Roofing		
Nails .....	.25	.10
No. 215 Detroit		
Vapor Oil Stove	85.00	70.00
No. 6 Letz Feed		
Mill	36.60	28.40

Chandler's used a half page in their local paper to tell their side of the case—and, of course, they got the response which always comes to an appeal expressed in a straightforward manner: Their business showed new life.

We have mentioned in earlier articles about the progressive merchandising methods of the Chandler Hardware Company the fact

Mr. Yerreck, M.	Electric Sweeper.....Tillage Tools
Address Toledo, O	Kitchen Cabinet.....Barn Equipment....
Location	Talking Machine.....Gas Engines.....
Phone No. 127	Electric Washer.....Fertilizer.....
Occupation (If other than farming)	Grease Separator.....Hay Tools.....
Renter No	Electric Iron .....Binder.....
Liabilities	Furnace.....Wagon.....
Credit Good	Stoves.....Plow.....
Pays	Fence.....Silo.....
Good Habits Good	
Remarks OK any amount. Ledger shows fairly prompt	
Date 9-20-19	
Rated by RAC	

Front and Back of Index Card for Mailing List. Used by Chandler Hardware Company, Sylvania, Ohio.

are not coming down we are quoting the peak price and today's on 25 articles (and there are many, many more) which would show the decline since October.

	Peak-Price	Now
Grain Sacks.....\$	.65	\$.35
30x3 Tire	19.65	12.60
1 Keg 8-Penny		
Nails	7.50	4.50
Oil Stove Wicks..	.40	.30
100 lbs. Reg. Carter's White Lead	16.00	12.25
Hercules Gas Engine	80.00	60.00
Hoover Potato Dig-ger	150.00	100.00
Team Harness....	100.00	72.50
16% Fertilizer....	37.50	23.75
Paint—I gal.....	5.50	3.50
Roofing—Slate Sur-face	4.50	3.00
Roofing—Galvan-ized	9.00	5.00
No. 1 Galvanized		
Tub	1.25	.50
12 qt. Galv. Pail..	.55	.30
1047—12" Fence, per rod .....	.70	.50

Turpentine, per		
gal.	2.50	1.00
Alcohol, per gal...	3.00	1.25
Clover Seed, per		
bu.	32.50	15.00

\$578.70 \$420.90

"We intentionally left out Linseed Oil, the star actor in the high prices which reached \$2.50 a gallon and during the past summer has sold as low as 90 cents. Your \$420.90 will buy as many goods as \$578.70 would six months ago or it is worth \$157.80 more than then, and yet we are told almost daily that retail prices have not declined. We are doing our part to get conditions back to normal, selling dependable goods at the lowest possible prices.

"The Chandler Hardware Co., Sylvania, Ohio. Phone No. 3."

That is a very excellent way of setting your case right with the judge—who in this case is the great body of consumers. It would be fine if more hardware merchants would follow this splendid example.

that they employ five "outside" salesmen.

All of these men travel by automobile. Some of them furnish their own cars, while others have them furnished by the Company, and their compensation is figured in accordance, practically on a basis of one-third of the gross profits made on the business turned in by each man.

This method avoids the bunching of a lot of sales of low-profit merchandise by any of the salesmen, and naturally encourages them to put more effort on lines that yield good profits.

Wants Self-Opening and Closing Farm Gates.

TO AMERICAN ARTISAN AND HARDWARE RECORD:

Can you inform me who makes self-opening and closing farm gates?

Yours very truly,

J. R. CHAPMAN.

—, Indiana, June 20, 1922.

Suggestions and Plans for Window Displays.

Instructive Examples from Exhibits in AMERICAN ARTISAN AND HARDWARE RECORD Window Display Competition.

SHOWS LIVING MODELS IN WINDOW DISPLAY.

Photographs, sculptures, paintings, and the most alluring works of art are dull and uninteresting as means for attracting attention in comparison with the living, palpitating, moving, alluring models who

You can make the front page of a daily paper with a story of a little girl weeping over her lost dog, when you can not reach that place of distinction with an account of an epoch-making scientific discovery.

So the big thing in this window display is the living models.

right hand side in the middle distance; sail and steam boats on the left.

"The incoming waves dashed on the painted beach in the immediate foreground and seemed almost to roll on the sandy beach which was built in the window.



Window Display of Bathing Suits and Supplies, Featuring Living Models. This Exhibit Designed and Directed by Otto J. Gress for Bunting Hardware Company, 810-12-14 Walnut Street, Kansas City, Missouri.

served to demonstrate bathing suits and supplies in the window of the Bunting Hardware Company, 810-12-14 Walnut Street, Kansas City, Missouri.

The big thing in advertising is news, and the heart of news is human interest.

This exhibit was designed and directed by Otto J. Gress for Bunting Hardware Company.

As described by Mr. Gress, the background of the display showed a "real sandy beach with painted curtain and inviting water, a realistic pier and a big pavilion on the

"The left side of the window was decorated with a striped umbrella over a small table and the right hand side showed a little beach tent through which the bathing girls came, when they entered the window.

"Two pretty girls were chosen

for the demonstration and they created a picture when they appeared in the window attired in the rainbow-hued rubber suits which are a decided novelty in our city.

"One girl was a tall graceful brunette and she looked especially beautiful in a suit of scarlet rubber with which she wore red satin bathing shoes and black silk hose rolled just below her knees.

"For changes of costume she would disappear from the window only to reappear in a pure rubber coat or cape of some brilliant and contrasting color with a cap, hat or gypsy turban to match.

"Sometimes she carried in her hand a little rubber powder puff bag and sometimes she carried a bag for her bathing suit.

"The other girl was a petite blond and she wore a bathing suit of a gorgeous blue with blue satin bathing shoes and silk hose fastened with novel rubber garters.

"With this she wore hats and caps of gold and a wonderful rubber coat made of blue and gold which would make a brilliant spot of color on any sunny beach.

"In order to show the many changes of costume to the best advantage the girls would pose gracefully, turn slowly about and stroll leisurely up and down the window, then they would seat themselves at the small table and sip refreshing drinks while the curious throngs outside would stare through the big panes of glass at the unusual demonstration.

"The resulting sales astonished even the salesmen. So pretty did the bathing girls look in the different kinds of hats and caps which they wore, that many of the girls and women who came in for bathing suits made the remark:

"I want the kind of a hat that the little blond girl is wearing in the window,' or 'let me see a cap with a brim like the brunette had on just a minute ago.'

"So many caps and hats were sold that some had to be taken from the demonstrators.

"A great many people who gazed in the window, of course, were not

altogether interested in the purchase of a bathing suit, but they were surely interested in the display and, of course, told so many other people that publicity was well worth while.

"The throng that gazed in the window at times was composed principally of men, so it became necessary to letter a card which one of the girls held up for all to read, 'Bathing Suits for the Ladies. Men give them a chance to see.'

"They looked, read and laughed, but continued to gaze.

"It became necessary for the store to place a rope in front of the window. This was held back far enough away from the window to form a narrow alley through which the people could walk past the window, and in this way all were given a chance to see.

"The local newspapers commented most favorably and gave the store considerable free advertising. One newspaper sent an artist down to draw pictures of the girls and the novel bathing suits, another paper called it 'riot.' Many times traffic was stopped."

Secretary Dietz Cleverly Edits the "Nebraska Ironmonger."

Strongly instrumental in sustaining the interest and enthusiasm of the membership of the Nebraska Retail Hardware Association is "The Nebraska Ironmonger," cleverly edited by George H. Dietz, Secretary of the organization.

Its pages are permeated with a cheerfulness which comes from faith in the power of the Association.

Secretary Dietz has a happy sense of humor which enlivens everything which he writes, and which no amount of discouragement can weaken or embitter.

The articles in the pages of "The Ironmonger" are not only instructive, but sprightly and tonic in their helpfulness.

There would be a lot more silence in this world if we talked only about the things we know.

Coming Conventions

Master Sheet Metal Contractors' Association of Ohio, Zanesville, Ohio, July 18 and 19, 1922. W. J. Kaiser, Secretary, 123 East Chestnut Street, Columbus, Ohio.

Annual Outing of Michigan Sheet Metal and Roofing Contractors' Association, July 25, 26 and 27, to Grand Rapids, Chicago and Milwaukee. Frank E. Ederle, secretary, 1121 Franklin street, Southeast, Grand Rapids, Michigan.

Sheet Metal Contractors' Association of Pennsylvania, Hotel Lawrence, Erie, Pennsylvania, July 27 and 28, 1922. W. F. Angermeyer, secretary, 714 Homewood Avenue, Pittsburgh, Pennsylvania.

Western Implement, Vehicle and Hardware Association, Kansas City, Missouri, January 16, 17, 18 and 19, 1923. H. J. Hodge, Secretary, Abilene, Kansas.

Texas Hardware and Implement Association, Dallas, Texas, January 23, 24 and 25, 1923. A. M. Cox, Secretary, 822 Dallas County Bank Building, Dallas, Texas.

West Virginia Hardware Association Convention and Exhibition, Huntington, West Virginia, January 30 and 31, and February 1, 1923. James B. Carson, Secretary, 1001 Schwind Building, Dayton, Ohio.

Indiana Retail Hardware Association Convention and Exhibition, Indianapolis, Indiana, January 30 and February 1 and 2, 1923. G. F. Sheely, Secretary, Argos, Indiana.

Wisconsin Retail Hardware Association, Milwaukee Auditorium, Milwaukee, Wisconsin, February 7, 8 and 9, 1923. P. J. Jacobs, Secretary-Treasurer, Stevens Point, Wisconsin.

Retail Hardware Doings

Georgia.

The Johnston Hardware Company stock has been sold to J. H. O'Neil at Rome.

Illinois.

J. F. Dickson of Decatur has moved his hardware store to the lot south of the Long restaurant.

Iowa.

Herman Sehlke has purchased the K. E. Brundige and Company's hardware stock at Magnolia.

Minnesota.

The hardware store of P. W. Bresnahan of DeGraff has been sold to H. A. Townsend of Campbell.

A new store, The Pany Hardware Company, has been opened at Montgomery.

South Carolina.

At Greenville, 216 Laurens Street, the Piedmont Hardware Company has opened for business.

Tennessee.

L. W. Wattenbarger of Athens is erecting a two-story brick building, which, when completed, will be opened as a hardware store by him.

The new hardware store of Reed and Prince of Murfreesboro has been opened for business.

Washington.

The Hinson Hardware Store has been opened at Sumner.

Study and Interpretation of Advertisements.

You Can Make Your Advertisements More Gainful by Avoiding the Faults and Profiting by the Good Qualities of Others.

At the National Retail Hardware Congress this year several speakers pointed out the advisability of increasing the lines of stock carried by hardware stores.

dealers ought to enlarge the scope of their trade.

Many hardware stores sell washing machines, wringers, and other equipment for the home laundry.

Those who do not sell them will find it to their advantage to look into this branch of hardware retailing as a means of drawing more customers to their store.

A good example of using laundry equipment and other lines to attract people to the store is shown in the advertisement of Mohr-Jones, republished herewith from the *Racine Journal*, Racine, Wisconsin.

This advertisement features Belgian willow clothes basket at a remarkably attractive price.

The clothes basket is offered for sale for two days only.

This serves to quicken the interest of the prospective customer.

By bringing more people to the store through such an advertisement, the dealer is enabled to add to his list of permanent patrons.

Beyond any question, a goodly percentage of those who come to the store for the first time in quest of such a bargain as Mohr-Jones offer will find many things to gain their favorable attention in the arrangement of the store, its prices, its conveniences, and service.

In this manner the advertisement fulfills its purpose of winning new clients for the establishment.

* * *

Here is a simple but resultful advertisement by the Shipley Hardware Company, which appeared in the *Lafayette Journal*, Lafayette, Indiana.

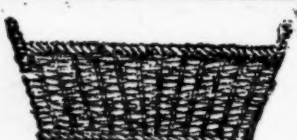
Just two groups of commodities are mentioned, namely, garden hose and refrigerators.

Both commodities are adequately illustrated, and the pictures have the uncommon advantage of the suggestion of use through action.

For the garden hose three prices per foot are quoted.

For the refrigerators, a range of prices is given from \$22.50 to \$90.00.

By the simple device of stating that the garden hose is new, fresh



98c
Special
Wednesday and Thursday Only

This fine Belgian Willow Clothes Basket tightly woven with strong reinforced handles. At this very special price for Wednesday and Thursday only.

Vacuum Bottles
While they last, a one pint vacuum bottle.

69c
(No cash discount on these items.)

MOHR-JONES

RACINE'S LEADING HARDWARE STORE
313-15-17-19 Sixth St.

It was indicated that department stores, drug stores, and other mercantile establishments are encroaching upon the hardware field and that, as a matter of self-defense and of sound business, hardware



GARDEN HOSE
New Fresh Stock
13c, 15c, 17c ft.



REFRIGERATORS
All Sizes and Prices
\$22.50 to \$90.

Shipley Hardware Co.
330 MAIN STREET PHONE 8

stock, a very good impression is created, because people know that rubber deteriorates with age, and are naturally interested in getting their supplies from new, fresh stock.

* * *

A time-tried and effective device is used by E. J. McGann in the advertisement reprinted herewith

TEN-DAY Special Cash Sale
AT THE NEW SHOPPING DISTRICT HARDWARE
NO. 114 E. BRIDGE ST.
E. J. MCGANN

16 inch Guaranteed Lawn Mower	\$7.49
Two Burner New Perfection Oil Stove	\$11.98
Three Burner New Perfection Oil Stove	\$18.98
Water Power Washing Machine	\$21.98
Galvanized Tube	90c, \$1.00, \$1.25
Galvanized Bushel Baskets	85c
Window Screens, Adjustable	49c
Screen Doors	\$2.49
Garden Rakes	48c
No. 9 All Copper Boilers	\$5.49
Long Handle Round Point Shovels	\$1.54
Copper T Kettles	\$1.79
Aluminum T Kettles	\$1.79
50 ft. Moulded Rubber Hose	\$7.98

Special Price on Furnace and Sheet Metal Work

from the *Oswego Palladium*, Oswego, New York.

He announces a ten-day special cash sale and includes in the list of goods enough different articles to give an idea of the extent of his stock and the reasonableness of his prices.

Pipes Should Be Large Enough to Take Eighty Per Cent of the Rated Heating Capacity of the Warm Air Heater.

The Return Air Ducts Should Be Ten Per Cent Larger at the Return Registers Than the Combined Area of Warm Air Pipes.

Written especially for AMERICAN ARTISAN AND HARDWARE RECORD by John B. Gohmann, Ottumwa, Iowa.

THE articles in AMERICAN ARTISAN AND HARDWARE RECORD issues of May the 20th and 27th by Mr. V. H. Parks are very good and should be adopted by the dealers for determining the sizes of pipes necessary. There is one other rule that I think should be observed by the dealer.

In fact, I think it so important that it should be a part of every city ordinance, and this rule is: The manufacturer should stamp on the casings or mould on the cast parts the rated heating capacity of the furnace.

The installer should then be compelled by law to install this furnace with pipes large enough to take 80 per cent of the rated heating capacity off the furnace. The return air ducts should be 10 per cent larger at the shoe or casing and 25 per cent larger at the grilles or return registers than the combined area of the warm air pipes, allowing 25 per cent for friction loss for the warm air pipes.

There are more furnaces burned out because the heat is not taken off them than are destroyed in any other way.

I saw an installation in Chicago a few weeks ago. The furnace was a tubular radiator style, with a 24-inch firepot. There were five 9-inch pipes and four 10-inch pipes running to five 3 x 12-inch stacks to wafer registers upstairs and two 3 x 12-inch stacks to wafer registers above the baseboard downstairs.

The heating capacity of these 9 pipes is 9 times 3 times 12 less 25 per cent for friction loss—equals 243 inches. The return pipes were one 20-inch and one 12-inch. This house should have had a furnace of 600 inches capacity with four 12-

inch pipes downstairs and five 9-inch pipes running to five wall stacks 3½ x 13½. This would have given 518 inches of radiation if figured at a friction loss of 25 per cent.

The return ducts should have been 518 inches plus 10 per cent at the casing and 518 inches plus 25 per cent at the grilles and down through the ducts under the floor.

The reason for this larger volume of return air is: When air is heated, it increases in velocity. To make up for this increased velocity the volume must be increased.

It is well to use an air-washer on the return ducts. This arrests all the dust and lint and odors from the air.

So many furnaces are sold as follows: Pete Black goes to Tinker Brown and says:

"Here, Tinker, is a plan of my new home (8 rooms and bath). I want you to figure a furnace for it."

Tinker says: "All right, I'll do it."

He takes the plan and after figuring according to his usual method finds that 400 inches of piping will heat the house. Now he is afraid to figure on a furnace less than 24-inch firepot, because that is what is used mostly.

This size in a high grade furnace is listed to fill 733 inches of pipe area. Now he figures the return ducts at 25 per cent less than the warm air pipe area. This figures 300 inches with a furnace of 733 inches capacity. He figures he can do the job for \$350. This will make a nice profit. Pete comes in and says:

"Brown, have you figured that furnace for my home?"

Brown answers: "I have it all ready for you."

"How much?" says Pete.

"Well, let me show you."

And he tells him all about the furnace and the way he will install it.

Pete says: "I see you have figured on a 24-inch firepot size. I was telling my neighbor about my buying a furnace and he said to be sure and take a bigger size than the dealer recommends."

Mr. Brown says: "The difference is not great. Let's see, it is only \$35.00. I believe I too would suggest a 27-inch firepot."

Pete says: "All right, go ahead and put in that size."

Now then: Is it all right? Let's see; we are taking a 27-inch firepot furnace that is listed to heat 1100 inches of pipe area and taking of 300 inches. Now what happens to the furnace? When the weather is below zero this furnace will need such firing that it will be overheated and will soon be burned out. The cellar is the hottest room in the house. Why? Because the heat can not come freely from the furnace.

How much better it would have been if Brown had said: "Look here, Pete, I'll tell you what we will do. Let us change the 12-inch pipe running to the living room to a 16-inch, the 12-inch to the dining room to 14-inch, the 10-inch to the hall to a 12-inch and the 9-inch to the kitchen to a 12-inch and the upstairs pipes from 8-inch to 9-inch. Then we will have 895 inches pipe area less 25 per cent friction loss, equals 671 inches. Then we will make the return ducts 671 inch plus 10 per cent at the casing and 25 per cent at the grille and through the ducts. This will take nearly the full capacity of a 24-inch firepot furnace of the large

radiator type, and would make an ideal heating plant."

With an air-washer it is not always necessary to run the return ducts down to furnace. The reason more air should be taken through the return ducts is because of the velocity of the air when heated, the higher the velocity the greater the intake should be.

The old theory that the expansion of air should be reckoned at 25 per cent is good if the air remained stationary but it does not. As soon as it is heated it rises and the hotter it gets the faster it rises.

It takes about 10 per cent more volume to make up for the increased velocity.

With a big volume of air passing around the furnace it will require only a moderate fire, with an air-washer the air will be cleaned of dust, lint and foul odors.

If all furnaces were installed as outlined above they could be truly termed warm air furnaces. A warm air furnace is one that is installed with big pipes off the top, and still larger ones leading to the return ducts.

It would be only a short time until the warm air furnace would be the favorite heating plant if they were installed as outlined above. The manufacturers could do much toward bringing this improved method about by telling their customers of the importance of this method.

There is one other thing that I wish to mention, that is wall stacks. These can be made by nailing a piece of 1/4-inch asbestos mill board on to the 4-inch side of the studding and then tacking a piece of tin over this. Then by tacking tin on the sides of the joists and 1/4-inch asbestos mill board over this the furnace man can get the full opening of the studding or about 3 3/4 x 13 1/2 inches.

This would be easy to do. If we can not get 2 x 6-inch studding for our wall stacks then let us do the next best thing and make them as outlined above.

I notice many articles in your paper about grate surfaces; but I

have never seen one in which the slotted fire was figured. The slots figure as so much grate surface. If the slots are correctly proportioned and if the firepot is of the right shape: larger diameter at the top than at the bottom, then the openings will let in as much air through as the entire grate surface. The slots should be 1/2 inch at the top and 1 inch at the bottom. If the ashes are shaken down well before coal is put into the fire this kind of a slotted firepot will not fill up.

The firepots on the greater number of furnaces are not made correctly. They should be made at least 1 inch smaller at the top than at the bottom. This shape cleans easier when the grate is shaken and, if of the slotted type, will wear longer.

A firepot in a furnace for a cottage flue should not be over 18 inches in diameter. Perfect combustion of fuel can not take place in a firepot larger than this.

There is not enough air drawn into a firepot of large size with a cottage flue to burn the smoke and gases. I have in mind the properly constructed slotted firepot. The average two storied flue does not have draft enough to give proper combustion of coal in a slotted firepot over 22 inches in diameter.

Another fault with our present type of furnace is the short fire travel. The radiators should be twice as large as they are now made. And as stated above the firepots should not be over 18 inches for a cottage flue and 22 inches for two-story building.

Gets Trade-Mark Registered in Patent Office.

Under Number 154,454, Henry Swartz, Philadelphia, Pennsylvania, has obtained United States Patent

MASTER

154,454

Office registration for the trade-mark depicted herewith. The particular description of goods to which it applies is carburetors which are air feeding devices in coal burn-

ing furnaces and for gas water heaters and tank water heaters. Application for registration was filed March 12, 1921, and Henry Swartz claims the use of this trade-mark since January 24, 1921.

Teaches Lesson in Verse on Ventilation.

Being an enthusiast on the subject of fresh, pure air, C. L. Atwood, advertising manager of the Milwaukee Corrugating Company, Milwaukee, Wisconsin, has composed the following instructive verses on ventilation:

When food is eaten to excess,

It dulls the sharpest brain,

While too much drink, we must confess,

Drives many men insane.

But too much air can not be had,

If it is fresh and pure,

It makes folks bright and strong and glad—

For sickness it's a cure.

Here Are the Greatest Things in Human Existence.

The greatest sin—fear.

The best day—today.

The biggest fool—the girl or boy who will not go to school.

The greatest deceiver—one who deceives himself.

The most beautiful woman—the one you love.

The greatest mistake—giving up.

The most expensive indulgence—hate.

The cheapest, stupidest and easiest thing to do—finding fault.

The greatest trouble maker—talking too much.

The worst bankrupt—the soul that has lost its enthusiasm.

The cleverest man—one who always does what he thinks is right.

The best teacher—one who makes you want to learn.

The best part of anyone's religion—gentleness and cheerfulness.

The most important training—training in democracy.

The greatest need—common sense.

The best gift—forgiveness.

George Harms Gives Plan for Old Subscriber's Installation.

TO AMERICAN ARTISAN AND HARDWARE RECORD:

In your issue of June 10th, an Old Subscriber of Minnesota shows the plan of a house and requests suggestions for its heating. This plan does not give definite measurements nor does it show the sizes of windows and it is, therefore, somewhat difficult to figure intelligently.

I have, however, planned the job as shown herewith, using side wall registers for heating, 12 inches for

If an Old Subscriber desires an estimate on all of the material required for this job and wants it published in the next issue of this paper, I will be very pleased to furnish it. Yours truly,

GEO. HARMS.

A Business Is No Better Than Those Who Run It.

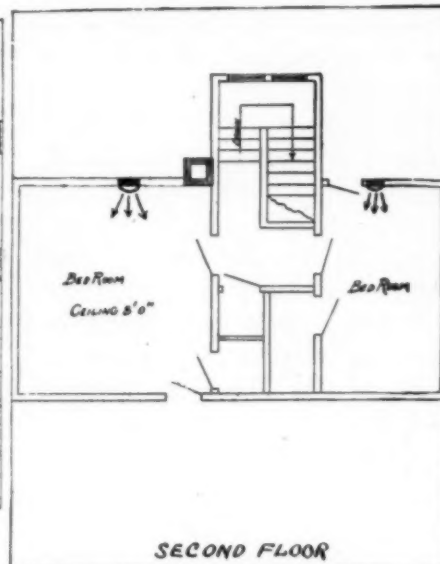
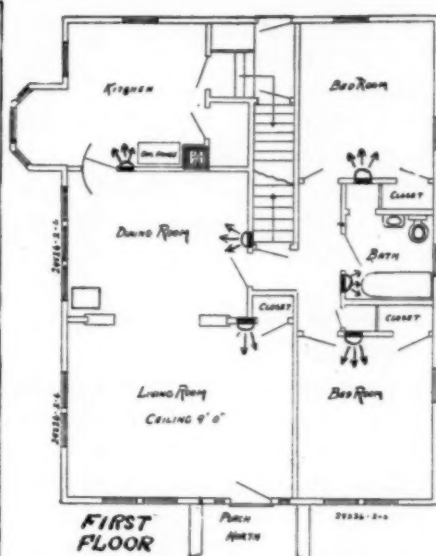
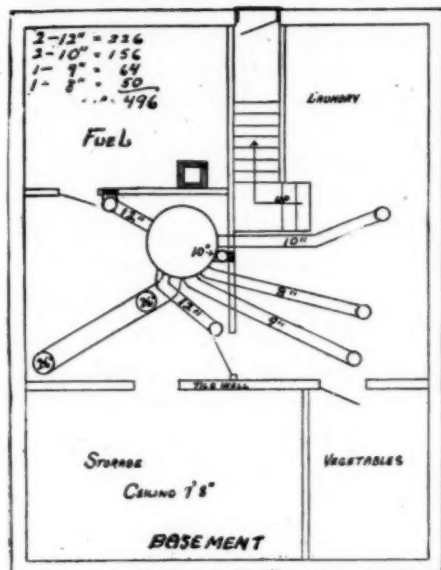
A skillful appreciation of values, a proper balance in the appraisal of plans is quite rare and difficult of attainment, says J. H. Tregoe, Secretary-Treasurer National Associa-

gin to measure everything in terms of method and make plans superior to the men who built the business up to its splendid proportions.

After all, a business is no better nor worse than those operating it.

The business reflects exactly the character, the ideas, the creative powers back of it.

Merely to install efficiency methods without correcting defects in the ability, intelligence or skill of the operators is falling short of the desired purposes and intensifies me-



Plan of Installation, Showing Location of Side Wall Registers.

the living room; 10 inches for the dining room; 9 inches for the front bed room; 8 inches for the bath; 10 inches to heat the rear bed room and continue on up to heat bed room on second floor.

The kitchen has 12 inches.

This is to continue to the second floor to heat bed room.

This is a total of 496 inches pipe area and a furnace capable to take care of this amount is required.

Twenty-five inches cold air will take care of this, but as this is not regular stock, 26 inches has been figured.

As it will be necessary to walk under the cold air pipe to reach the coal room and to feed the furnace, a rectangular pipe 16x33 is used against the ceiling.

As the basement is 7 feet 8 inches, this would leave 6 feet 4 inches to pass under.

tion of Credit Men. We blow either too hot or too cold. Evenness and neutrality are not ours. It is for this reason that we make so many mistakes in conducting our business and in formulating our plans.

Now the lowering of production and distribution costs is a worthy objective. In the rapid development of a business which often results in the different parts of a business getting out of alignment so that efficiency is lost, it suddenly occurs to the officers, perhaps, to try methods which would tend to greater efficiency.

They turn to a class of workers designated as efficiency engineers. These experts, instead of appraising efficiency engineering for what it is actually worth and not overplaying it to the extent of really increasing the cost of production, be-

chanics at the expense of humanity.

To make business more efficient, that is, to make it more productive and a greater service to the public, every human unit should be made to fit the niche it is best qualified to fill, and with improvements in the personal elements and the personal skill, there is no doubt of resultant profits and service.

The disposition on the part of efficiency experts has been to subordinate the human to the mechanical, when the reverse process is a better guarantee of success and progress.

Never must the human be subordinated to mere machine methods. Development comes only with freedom of initiative, with training to assume responsibilities, with strict attention to firmly fixed objectives.

Predicts General Adoption of Circulators as Necessary Elements of Warm Air Heater.

At Low Temperatures the Circulator Produces More Velocity Than Can Be Produced by Gravity under Similar Conditions.

Editor's Note:—The following article is a reproduction of the address delivered by F. R. Still, Vice-President American Blower Company, Detroit, Michigan, at the recent Convention of the National Association of Sheet Metal Contractors in Indianapolis, Indiana. It was deemed advisable to publish it separately from the account of the Convention in order that its various formulas might be given in full.

THE National Warm Air Heating & Ventilating Association entered into an agreement with the University of Illinois in 1918 to conduct research work on furnaces. It was required that a semi-annual report should be made on the progress and such reports have regularly been made. They have appeared in the University of Illinois Bulletins Nos. 112, 117 and 120. The last report, which has not yet been published, was submitted to the last meeting of the Association at Cleveland, Ohio, and covers all of the work since May, 1921, except the investigations reported in a special bulletin on the subject of "Forced Circulation with Fans and Blowers."

The work so far completed at Urbana has made available a wealth of valuable data which never before existed. With this data, it is now possible to calculate the size and the performance of a furnace with the same accuracy as the size and performance of a steam or hot water boiler can be determined. The unfortunate part, however, is that apparently very few who have the reports in their possession know that it is possible to make practical use of the data. This was very impressively presented at the last meeting of the Warm Air Heating & Ventilating Association in Cleveland on April 19th and 20th.

Every member of the Association

is proud of the fact that he is a contributor to the fund which pays for carrying on the research work at Urbana. He swells with pride whenever praise is bestowed upon him, for being a party to the conduct of such a splendid piece of work. He feels that he is something of a philanthropist, somewhat like Rockefeller, who through his foundation fund is rendering such valuable service to the world, in the discovery of the cause and prevention of diseases.

It was very interesting to note how every one listened with rapt attention to Professors Willard, Kratz and Day, when they presented their reports on the work accomplished. Everybody seemed to be deeply impressed and thoroughly convinced of the value of the work. The enthusiastic applause with which the reports were received would indicate to anybody who was not familiar with the true situation, that henceforth, the furnace business will be conducted on a scientific basis.

Shortly afterward, the Code Committee, headed by Professor J. D. Hoffman of Purdue University, made its report. This committee has struggled long and arduously in an endeavor to reconcile all the elements, so as to get them to agree on the various phases of the industry as they might be affected by the code. They finally submitted a report which was only satisfactory in part to anybody.

When it was presented to the Convention, Professor Hoffman asked that he be not accused of responsibility for the rules given in the report for determining the size of the pipes or leaders, nor for the omission of a rule governing the size of the risers or flues in the partitions.

He claimed that the rule proposed did not harmonize with the results

obtained at Urbana; had no scientific basis; was dependent on unreasonably high temperatures, and was not based on what he would consider conservative practice. The omission of any reference to the size of the risers, he explained, was owing to the disinclination of several of the committee to fight for six inch instead of four inch stud-ding being used in those walls or partitions in which risers must be located to convey heat to the upper stories.

The report as presented would likely have been adopted without amendment if it had not been for the objections raised by three or four members, who recognized what a serious mistake it would be. After considerable debate, the report was referred back to the committee to see if some agreement could not be reached inside of an hour.

This committee retired to another room. Mr. P. J. Dougherty, Engineer of the Utica Heater Company, undertook to explain a very simple formula he devised which is based on the experimental engineering data taken from the reports issued from Urbana. As soon as the members of the committee thoroughly understood it, and had checked it by application to several test problems covering quite a wide range of capacities, thus satisfying themselves that it is conservative and reliable, as well as simpler than the one they had originally recommended, they agreed to adopt the rule and reported this decision to the main body in less than half an hour.

This action is a wonderful accomplishment. It means more to the future success of the furnace business than most of those who voted for the adoption of the code fully realize. A foundation has been laid for progress and improvement. The code is not perfect; but having laid a good foundation on which to build, future amendments will correct and improve the code until it becomes more nearly perfect. A parallel case is the American Society of Mechanical Engineers' Boiler Code which has been under

constant modification for many years, to keep step with the advancements of engineering knowledge and the changes as they take place in materials, methods and demands for service.

One fault that will have to be corrected in the future, is to let all the dealers, agents and others interested in the furnace business, have all the data and the information just as soon as it comes from the University of Illinois. The code is to be printed in large numbers and distributed very generously. Very likely this will be followed from time to time with condensed data and tables, as definite results are obtained from research and experiments.

The rule proposed by Mr. Daugherty is based on the following:

Outside temperature zero degrees Fahrenheit

Inside temperature 70 degrees Fahrenheit

Heat loss per hour per sq. ft. of exposed wall surface of ordinary frame construction } 25 B. T. U. ($0.36 \times 70 = 25.2$ B. T. U.)

Heat loss per square foot of glass per hour } 83 B. T. U. ($1.18 \times 70 = 82.6$ B. T. U.)

Heat lost per cu. ft. of air space in a room, allowing one air change per hour } 1.25 B. T. U. ($.075 \times 0.238 \times 70 = 1.25$ B. T. U.)

If we divide 1,000 B. T. U. by each of the above factors, the result will give us the square feet of wall surface, the square feet of glass surface, and the cubic feet of space,

respectively, to equal 1,000 B. T. U. loss per hour. For example:

1000
— = 40 square feet of wall surface per thousand B. T. U.

1000
— = 12 square feet of glass surface per thousand B. T. U.

1000
— = 800 cubic feet of space in a room per thousand B. T. U.

Supposing we have a room 10 feet by 12 feet and 9 feet high, having two windows, each about 16 square feet area. If two of the 10 foot walls have outside exposure and only one of the 12 foot walls is so exposed, then the wall exposure will be $10 \times 9 \times 2$, or 180

10 feet x 12 feet x 9 feet contains 1,080 cubic feet of space.

By dividing each of these quantities by their corresponding factors, as shown above, the result will be the heat units required in thousands; all three should be added together to get the total heat required for the room. This can be stated more clearly as follows:

$$\frac{256}{40} + \frac{32}{12} + \frac{1080}{800} = 6.4 + 2.66 + 1.35 = 10.41 \text{ or } 10,410 \text{ B. T. U.}$$

Now what we are aiming to do is to determine what size the leader or pipe should be from the furnace to this room.

By referring to the chart on page 24 of Bulletin No. 120, published by the University of Illinois March 21, 1921, we find that at a temperature of 195 degrees there was obtained 125 heat units per square inch of leader per hour to the first

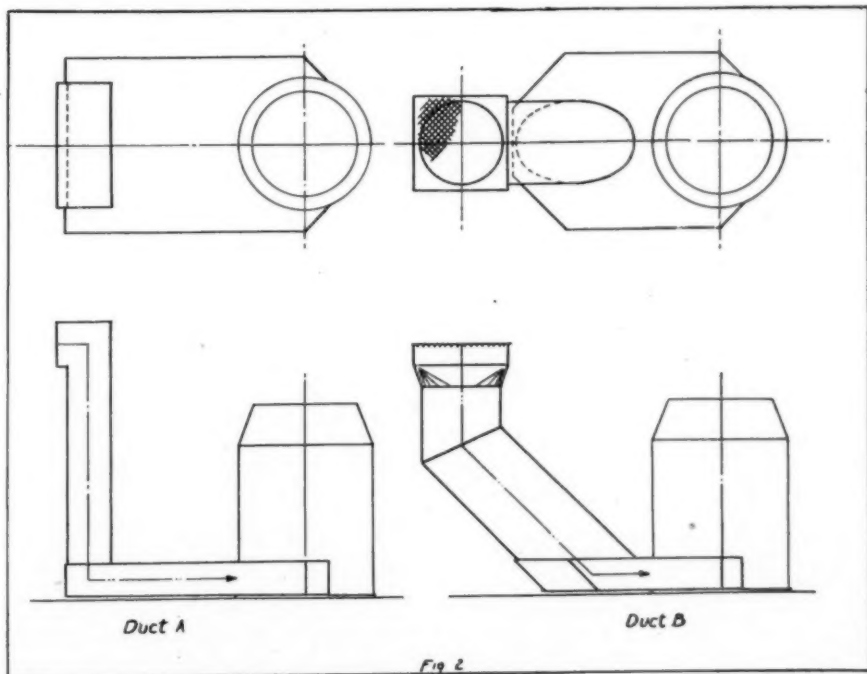
story. Hence, $\frac{1000}{25} = 8$ square

inches per thousand heat units loss. Therefore, if we multiply 10.4 by 8, we get 83.28 square inches area of pipe or leader to the room, if it is on the first floor. This is about the area of a pipe 10 inches diameter.

If the same temperature of 195 degrees is assumed for determining the second and third story pipes or leaders, the area of them should be respectively 5 square inches to the second story and 4 square inches to the third story, per thousand heat units exposure. Thus, for a similar room on the second floor, the area of the pipes would be 52 square inches or an 8 inch diameter pipe to the second story, and 41.64 square inches or a 7 inch diameter pipe to the third story.

(To Be Continued)

Service is measured not only by a disposition to serve, but also by ability to serve. There is nothing more pathetic than good intentions without the power of making them effective.



Two Types of Recirculating Ducts. Change from "A" to "B" Will Show Surprising Results.

Practical Helps and Patterns for the Tinsmith.

Aids to the Improvement of Craftsmanship and Business.
News from Various Branches of the Sheet Metal Trade.

PATTERNS FOR PLANER HOOD.

By O. W. Kothe, Principal, St. Louis Technical Institute, St. Louis, Missouri. Written especially for American Artisan and Hardware Record.

Sheet metal workmen doing blow-piping are well acquainted with the planer machine.

In this drawing we have a sketch

of a planer hood used on the old style planers.

The new style is made straighter and is much simpler, although larger.

On some of these new style high speed planers, as much as 300 feet of lumber passes through the machine per minute. So a person can see what a great volume of shavings such a machine will produce by

running a few moments, to say nothing about all day.

Our side elevation shows the general shape of the hood from an end view and the front view shows how the sides are straight.

Now to save much production work, we lay out this hood similar to other hoods that require ordinarily a change of profile in order to get the truth girth and the proper intersections.

So we first detail the side elevation, making the Ogee curve A-D and B-C to suit the width of the base G-C and the top A-B.

Then draw the front elevation as D'-C' and A'-D' to the required widths, after which draw slant lines B'-C' and A'-D'.

Now divide the center line 1-15 in any number of equal parts and from each of these parts, extend points so as to intersect the side lines of front elevation, and also extend them to extend the front and back lines of side elevation as in points 1'-2'-3', etc., also 1"-2"-3"-4" etc.

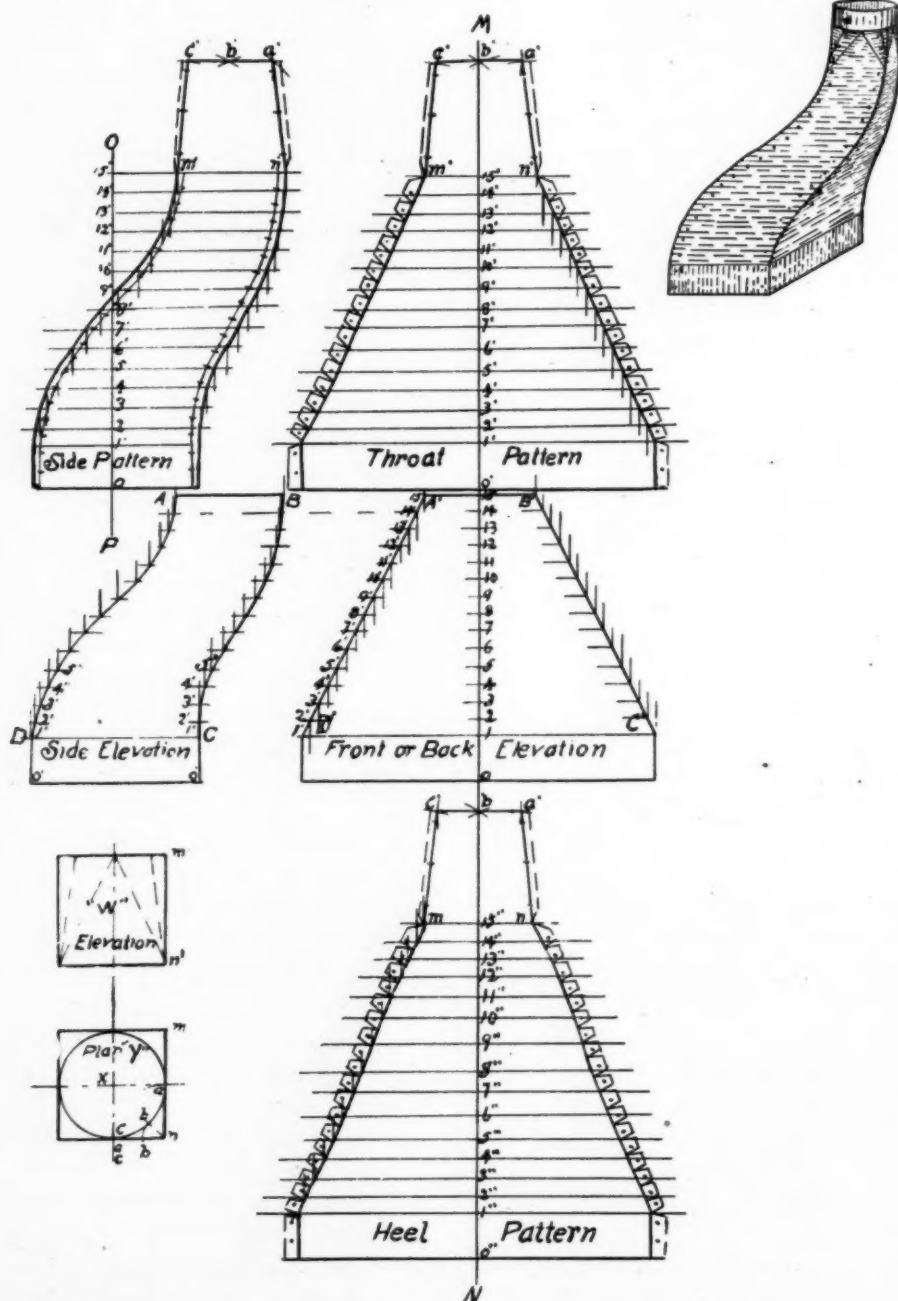
Now these intersections will be as though we draw lines square, around each side of the fitting.

These lines will be the horizontal on all sides, and the corners will meet in true horizontal position, although the widths between spaces may change to suit the curve or slant in the outline.

But this will not change the horizontal position of the lines, whereby it may be thought that some will fall below or above the corners, which is not the case.

To set out the pattern for the side, pick each space separately from the front elevation as 1'-2'-3', etc., to 15' and set these on a line O-P as 1'-15'.

Through each of these points, draw stretchout lines and then from each intersection in Ogee A-B, and also B-C of side elevation, erect



Patterns for Planer Hood.

lines until they meet with similar lines in stretchout.

Through these new intersections, sketch the uniform curve and you have the pattern. Squares to round can be added later. As both sides of front elevation flare alike, this pattern would be used for the other side also.

To set out the pattern for the front and back, pick the girth along the Ogee B-C of side elevation as 1'-2'-3'-4', etc., and set on the center line N-o' above front elevation.

Through each of these points, draw stretchout lines and then from each point in the side lines as A'-D' also B'-C' erect lines to intersect those in stretchout of corresponding number and this enables tracing the miter lines in pattern for throat.

The same procedure will be followed for the pattern for heel. By picking the girth from the heel of side elevation as 1"-2"-3"-4", etc., and setting it off on the line b'-M.

After this, develop this pattern the same as the throat pattern.

The treatment of the square to round can be done as at drawings "W" which shows the elevation of "Y" in plan.

Square to round added on these fittings are generally proportioned to make their height m'-n' to equal the diameter of round pipe.

Otherwise, the patterns are laid out the same as any ordinary square to round. Edges must be allowed for riveting purposes as shown.

Riveting lines can be drawn in the side elevation as a guide for riveting the lugs of throat and heel, so that the rivets are all on uniform lines and are not studded in every which way direction.

New England Sheet Metal Men Prepare for Annual Outing.

The New England Federation of Sheet Metal Contractors will hold their summer outing at Salem Willows, Massachusetts, on Friday, August 4th, 1922.

Those who are planning on attending this gathering may get in touch with the Secretary, F. E. Treuchet, P. O. Box, 616, Spring-

field, Massachusetts, or with H. S. Pyne, Secretary North Shore Association, Peabody, Massachusetts.

The cost of this outing will not exceed three dollars per person, and will include refreshments, a shore dinner, and a trip by boat around the North Shores.

The invitation is extended to the members and non-members of the Association and their families, and the jobbers and salesmen of New England.

Issues Program for Sheet Metal Convention of Pennsylvania.

An excellent schedule has been arranged for the sessions of the annual convention of the Sheet Metal Contractors' Association of Pennsylvania and Distributors' and Salesmen's Auxiliary, which is to be held July 27 and 28, 1922, at Hotel Lawrence, Erie, Pennsylvania. It is as follows:

Thursday, July 27, 1922.

8:30—Registration of Delegates.
10 a. m.—Convention called to order by President Luckhardt.
Open by singing America.
Address of Welcome by Mayor Miles B. Kitts.
Response by President Luckhardt.
Appointment of Resolution and Auditing Committee.
President's message.
Question Box.

Afternoon Session.

1:30 p. m.—Moving Pictures of Manufacture of Steel, American Rolling Mills Company.
2:30—Blackboard Demonstration of Short Cuts in Mathematics by George E. Crusoe, author of Y Mathematics.
Address by Representative of State Compensation Board.
Address on Organization by Edwin L. Seabrook.
Secretary and Treasurer's report.
Business Principles, Price Cutting, E. L. Scott.
Question Box.

Friday, July 28, 1922.

9 a. m.—Address by LeRoy Wood, Secretary Manufacturers' Casualty, subject, Compensation Insurance.
9:30—Report Overhead Expense Committee, Walter H. Tinney, Chairman.
Report Vocational Education, W. J. Keist, Chairman.
Report Resolutions Committee.
Address on Warm Air Heating, Its Development and Possibilities.
Question Box.

Afternoon Session.

1:30—State Association business.
Report of State Auxiliary by Thos. Cook, President.
Nomination and election of officers.
Selection of Convention City.
Officers State Association.
President, Louis Luckhardt, 508 2d Avenue, Pittsburgh, Pennsylvania.

First Vice-president, Charles A. Bachman, Easton, Pennsylvania.

Second Vice-president, Jos. Urban, Reading, Pennsylvania.

Secretary, W. F. Angermyer, 714 Homewood Avenue, Pittsburgh, Pennsylvania.

Treasurer, G. C. Krack, 1018 W. 19th Street, Erie, Pennsylvania.

Officers', Distributors' and Salesmen Auxiliary.

President, Thos. R. Cook, Jr.

First Vice-president, Warren Carter.

Second Vice-president, C. J. Besore.

Secretary, Oliver C. Brooks, 2138 North 19th Street, Philadelphia, Pennsylvania.

Treasurer, W. J. Gownen, Jr.

Committee of Arrangements.

Finance—

H. G. Hartline and S. G. Warren.

Publicity—

H. G. Hartline and D. E. Habercorn.

Ladies—

F. Coleman and George Nelson.

Entertainment—

Gust Krack, L. Auer, F. Braeger, F. Murphy, W. Evans, S. Warren, B. Braggins and G. Nelson.

Reception—

H. Braggins, G. Auer, J. Balzer, William Krack, Ed. Hartline, H. Hartline, F. Coleman and H. Murphy.

Iowa Auxiliary Works for Success of Sheet Metal Outing.

The following letter has been sent to all members of the Jobbers' and Salesmen's Auxiliary of the Iowa Sheet Metal Contractors' Association by C. F. Anderson, president of the Auxiliary, urging activity for the success of the outing of the sheet metal trade:

"The Iowa Sheet Metal Contractors' Association will have a picnic at Clear Lake, Iowa, on Saturday and Sunday, July 15th and 16th, and they have graciously invited all Auxiliary members to be present and participate.

It is earnestly desired that you make every effort to be present on the above dates and to be prepared to assist in entertaining every individual belonging to the Sheet Metal Contractors' Association.

"It has been suggested that the Auxiliary members furnish a picnic dinner on Saturday evening and it has also been suggested that some other form of entertainment be furnished by the Auxiliary, if it is possible to obtain such at any moderate price.

"A radio program has been suggested and also an orchestra to fur-

nish music for a dance and if you have any suggestions please write me by return mail so that your suggestion may be considered along with others in an effort to devise the best form of entertainment possible for the Association.

"The tentative program consists of assemblages at East Park, Mason City, Iowa, at 1:00, a few sports and games followed by tour around Mason City leaving for Clear Lake about 3:00 or 4:00 p. m. Bathing from 5:00 to 6:00, dinner 6:30 fol-

lowed by two or three short talks, about 9:00 dancing at White Pier.

"Sunday morning boat ride on Clear Lake with probably a program on boat terminating about noon. Definite program and arrangements are expected soon."

A Sick Baby, With a Serious Complication of Diseases, Puts Jim Blooey in a Very Miserable Condition of Mind.

At First, Greenburg Thought That He Could Save the Baby's Life, But Further Examination Convinced Him That It Was a Hopeless Case.

Written especially for AMERICAN ARTISAN AND HARDWARE RECORD by J. C. Greenburg of Cleveland, Ohio.

I STEPPED off a train in a certain city, and after getting into the bus and reaching the hotel, I found a big convention on, and no rooms for the traveling man.

This was tough luck, till I called up my friend, Bill Ellison, who told me to come out to his house where he had a spare room for me. Believe me, this was welcome news. In about half an hour I was there and was fixed up right.

Bill was a real good sort of a fellow. He was living with his mother and had a really nice home. Since Bill got back from overseas he seemed to have become more progressive, and was anxious to learn all he could.

We were seated, had lit cigarettes, and intended to talk a little while about business and retire. But it seems that Bill had something on his mind, and was bound to have it out.

"Will you tell me," he began, "how is it that I can not land some of the customers that a certain competitor gets. I often have to bid against him and when I do, I may as well kiss that job good bye. He is not a cheap man, and yet is not clever at selling. In a debate, I could walk rings around him. In fact, I did this at the association meeting last week where we were discussing the arguments used in selling a furnace. I won the debate but he gets the business."

"Well, what about it?" I asked, not knowing just what he was driv-

ing at. "What about it?" he asked in surprise. "It proves that the man who knows his selling talk the best is not always the best business man. It means that your arguments about knowing how to sell goods does not hold water. Here I won a selling debate, and in actual business getting I fall down. What is wrong?"

Here was a puzzling situation. Here I was, with all my arguments about selling talks and all that, driven to the wall. But I knew I was right in my teachings, but something was wrong with Bill. So after a little study I began to see a way out along the line of logical explanation.

"Bill," I said, "you are up against a peculiar situation mentally. You believe that simply knowing how to tell a customer all about a furnace is all that is necessary to bring about a sale. You seem to forget that you must create the right kind of interest in order to help the customer buy."

"Create interest?" Bill replied. "Is not a good selling talk interesting?"

"Yes," I admitted. "It is interesting to the seller, but not always to the buyer. You must not judge your selling talk by how you personally like it, but rather how the customer likes it. If he likes it well enough to spend his money, then only is it interesting to him."

"I do not quite understand you," Bill answered. "Do you mean that when I use a good selling talk it

should not sell the goods for me?"

"That is just what I mean," I replied. "You seem to forget that you are not selling your goods. You are helping a customer buy. In order to help a customer buy something, you must take human nature into consideration. You must know the kind of interest you should create."

Bill just nodded his head, and waited for me to proceed.

"You see, Bill," I went on. "There are different kinds of interest. For instance, there is spontaneous interest—that is, sudden interest like that shown at a big fire, or at a sudden dog fight, or an explosion. That kind of interest compels attention in spite of everything else. Then, there is cultivated interest such as Association meetings, study, church, music, etc. You will readily see that both interests are caused by different causes. One compels attention at once, while the other gradually creates interest."

"This is a little too complicated for me," Bill said slowly. "Can't you be a little more simple about it?"

"I think I can," I answered. "In selling goods, you can not expect to have your talk create a sale with a person unless that person has confidence that you are an able man in your line. You will notice that the sales you have lost to your competitor were in cases where you and the customer were total strangers, and they did not have that confi-

dence in you they should have had. You tried to create sudden interest in the mind of a person who was not willing to back his money against an argument by a man he did not know well enough."

"I agree with you on this point," Bill admitted, "but I can not live by waiting to sell only to my friends. My friends can not use me every day, and I must sell to strangers if I can. Sudden interest as you explain was the only chance I had to create a sale."

"You are right, Bill," I replied. "Your friends are already interested in you because you have created interest slowly and thereby have cultivated interest. What you need to do is to make more friends, and in this way create raw material for customers."

"Make more friends," Bill repeated. "This is not so easy done as it is said."

"It is easy enough, Bill, if you do as your competitor does," I said. "If you will notice, everybody knows your competitor. He is a member of the several lodges in this town, he is a mixer with the people, he is well acquainted with everybody in town, and they all know that he is in this business, while very few people know you. You do not mix enough with the public, you never advertise, and seem to think that all you have to do is to wait till there is a bid to enter and then you go after it. All of your selling talks will do no good unless you cultivate that interest which creates possible customers."

"You mean, then," said Bill, "that I should meet more people and get better acquainted with the public."

"That is just what I mean, Bill," I answered. "You are too studious and spend more time at home that you should use to mingle with the public. Study is all right when you lay away certain hours for it, but you can not afford to study at the expense of getting known in a business way. Get around a little bit. Visit the Chamber of Commerce and join it. Donate a little to charity so your name will become a pub-

lic word. Try to get into the Kiwanis club, or join a lodge or two. Attend to the City Council meetings and your association. Put out a thousand advertising blotters, and run an ad in the papers. Meet the architects, and put a little advertising matter into your letters. This advertising matter you can secure free from your jobbers. In plain words, you are hiding your light under a bushel basket."

"You are right about this," Bill admitted. "I have never thought of this before."

"To prove this," I insisted, "ask anyone who Jones, your competitor, is and at once they will tell you that he is a sheet metal man. He is a good mixer, and cultivates interest. He does not wait to create interest like a sudden fire or an explosion does. He is steady, and in the public eye. You have tried to take away a customer's money all of a sudden, and the customer was not interested, so your competitor gets more business than you do. Just think this over and see for f. See the advantage of cultivating interest instead of doing it on the jump. Create public interest and give Jones a run for his money."

With this we retired.

Chicago Sheet Metal Worker Is Champion Barnyard Golfer.

Tossing eighteen "ringers" in one day is a common performance for Johnny Hogan of Chicago, sheet metal worker and champion horse shoe pitcher of the State of Illinois.

He is described as having an easy motion which sends every shoe dead on to the pin to count either as ringer or leaner.

Next month he will compete for the world's championship at Des Moines, Iowa.

Here is a hint to the sheet metal trade of that progressive city: Meet Johnny Hogan when he comes to Des Moines; attend the championship games; and by your enthusiasm, help spur him on to victory that he may win the world's cham-

pionship and thus shed additional honor upon the ancient and worthy craft of sheet metal working.

Trade-Mark Is Registered in Patent Office.

Rome Brass and Copper Company, Rome, New York, has obtained United States Patent Office registration under Number 154,450, for the trade-mark shown here-



with. The particular description of goods to which it applies is brass, bronze, and copper sheets, rods, rolls, strips, extruded shapes, angles, and channels. Application for registration was filed August 23, 1921, and the Company claims the use of this trade-mark since 1909.

Gives Practical Method for Repairing Split Tin Seams.

Written Especially for American Artisan and Hardware Record by L. S. Bonbrake, Peoria, Illinois.

One of the prolific sources of trouble, and little revenue from repair work for the tinner is split or cracked seams, especially in deep roof gutters.

This character of repair work is done in the same haphazard manner from year to year, piling new solder on top of the old, to go back and do the same thing over again next year.

As a suggestion, we advise trying another method next trip, and believe you will then lose sight altogether of Spoofendyke's old porch roof.

Remove all the old solder, dirt, rust and paint from around the cracked portion of the seam. Open up the seam a quarter of an inch on each side of the crack with a knife blade. Cut strips of tin $\frac{7}{8}$ inch wide and form an eighth inch hem on each edge, but on opposite sides of the strips. Clamp one of the hems down tight with the folder,

or brake, let the other end open as it comes from the brake. Then set the brake gage back to $\frac{3}{8}$ inch, place the tight hem in the brake hem up and form at a right angle $\frac{3}{8}$ inch wide.

On the job cut lengths of strips so that they will fill in the split space also the half inch opened up seam, enter the $\frac{1}{8}$ inch open hem into this crack, then close nail the strip or patch back of the seam.

Mallet the closed hem down over the seam, obviating raw edges (hard to solder to stay) and giving a strong "blind nailed" seam readily soldered, that will stay "put."

This method makes an admirable patch for iron or steel roofing, or a rusted tin roof, beyond soldering when the mixture as stated is applied carefully.

Mix oxide of iron to a comparatively dry mass by adding coal tar.

To this dry mass add boiled linseed oil, a little at a time, and mix thoroughly until of the consistency of glazier's putty.

It will not dry hard and will stop a leak in the bottom of a water tank.

Gives Out Ohio Sheet Metal Convention Program.

The Executive Committee of the Zanesville Local of the Sheet Metal Contractors' Association of Ohio is determined to show some of the cities what a small town can do when it comes to putting on a real convention.

This committee, consisting of L. W. Henslee, chairman, H. W. Roe, J. W. Ludy, J. T. Shaw, and C. F. Saup, is ready right now for the eighth annual convention of the Sheet Metal Contractors' Association of Ohio, which is to be held July 18, 19, and 20, 1922, in Zanesville, Ohio. The program is as follows:

Tuesday, July 18, 1922.

9:00 a. m. Register.
2:00 p. m. Meeting of state officers.
7:30 p. m. Song, America.
Selection, Armco Mando Orchestra.
Introduction of Mayor.
Address of Welcome, Mayor C. C. Slater.
Response by State President A. E. Munkel.

Address, America First, by Charles N. Mead.

Selection, Armco Mando Orchestra.
High-grade entertainment, Jobbers' and Salesman's Auxiliary.

Wednesday, July 19, 1922.

9:00 a. m. roll call of officers.
Reading of minutes.
Report of State President.
Report of State Secretary.
Report of State Treasurer.
Address, Looking Ahead, W. W. Lewis.
Business session.
Address, Ventilation In Its Relation to the Sheet Metal Business, F. R. Still, American Blower Company.
Question Box.
Address, Best Means of Advertising



Zanesville Local Convention Committee—Reading from Left to Right: J. T. Shaw, C. F. Saup, J. W. Ludy, H. W. Roe, and L. W. Henslee.

as adapted to the Average Sheet Metal Shop, A. G. Pedersen, AMERICAN ARTISAN AND HARDWARE RECORD.

1:00 p. m., Ladies' auto tour and visit to the Weller Art Pottery.

1:30 Gentlemen's auto tour and visit American Rolling Mills.

4:00 p. m. Ladies' and Gentlemen at Putnam Hill Park.

5:30 p. m. five-mile trip to Moxahala Park with a sumptuous dinner, a band concert by the famous Zanesville Armco Concert band, then to the dance hall till you get ready to turn in.

Thursday, July 20, 1922.

9:00 a. m. Address, Safeguarding Estimates and Insuring Profits, R. H. Spare.

Unfinished business.

New business.

Address, Proper Methods of Installing Warm Air Heaters, Oliver Gedeist, Utica Heater Company.

Question Box.

Election of Officers.

Convention City, 1923.

Peoria Local Elects Officers for Ensuing Term.

At the June meeting of the Sheet Metal Contractors' Association of Peoria, Illinois, the following officers were elected for the ensuing term:

President: CHARLES N. LOUIS.

Vice President: CARL G. RAPP.

Secretary: FRANK I. EYNAT-TEN.

Treasurer: RUDOLPH JOBST.

Much discussion was given to the subject of vocational training of the apprentice at the Bradley University.

Tells How to Lay Illinois Zinc Shingles.

Inasmuch as Illinois Zinc Shingles are designed to give the best possible service as a roof covering, it is necessary that the other materials that go to make up a satisfactory roof should be the best of their respective kind.

Sheathing. The sheathing under shingles should be free from sap, rosin, or other defects which will tend to shorten the life of the roof.

We recommend square edge sheathing boards, either rough or dressed. If dressed and matched stock is used, care should be taken that they are not driven up tight, so as to prevent warping and buckling at the joint, either before or after the shingles are laid. Do not lay shingles over wet sheathing. If yellow pine sheathing is used, we recommend the use of plain unsized or oiled building paper. Do not use tarred or rosin sized paper of any description. Sheathing paper is always worth more than it costs, and it is desirable on any roof.

Nails. Nails for applying shingles should be those furnished with the shingles, as these have been found to be the most satisfactory for the purpose.

There is but one nail to each shingle, which should be driven up tight through nail hole provided in shingle in lower right hand corner. If this hole comes over a crack in sheathing, nail above it. The half shingle at right hand eave should have nail driven through the shingle at upper left hand corner but not through the under shingle.

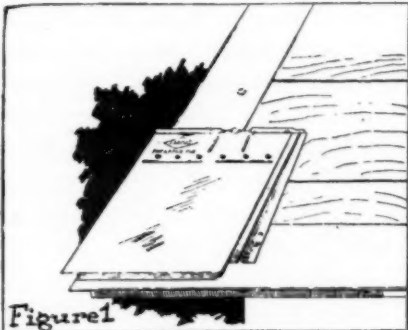
Each shingle or one-half ($\frac{1}{2}$) shingle should contain but one nail to hold in place, except those formed at hip joints; when these are cut

on a diagonal and bent over the hip, an additional nail is necessary to hold in place.

Starting Strip. Place starting strip on all eaves, gables, etc., butting ends together securely, nailing same to sheathing with zinc clad nails supplied with shingles, spacing nails about 8 inches apart. If ordinary gutter hangers are to be used, they should be nailed in place when eave piece is laid.

Valleys. Place all formed valley sheets, if purchased with the shingles, where required, nailing sheets with zinc clad nails at the top, lapping sheets at least 6 inches. Sheets are formed narrow at the lower end to slide into upper end of lower section.

Do not solder sheets together. Care should be taken that valley sheets lay smoothly in place. Lower end of sheets should be extended over starting strip at eaves, to be bent under after shingles are laid. Valley is supplied in lengths of 48 inches formed.

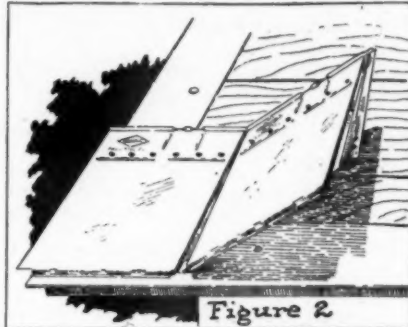


Illinois zinc shingles are laid from left to right. After roof is prepared with zinc starting strip on all eaves and gables and with zinc valleys in place, begin at the lower left hand corner to lay the first row of shingles.

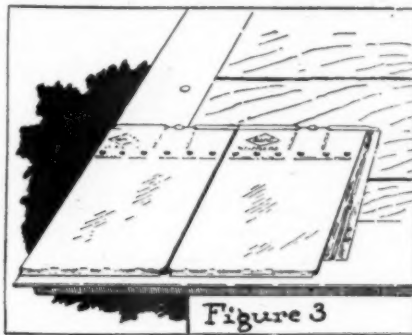
The first shingle is cut to extend over the starting strip of the gable about $\frac{3}{4}$ inch, with lower edge of shingle about $\frac{3}{4}$ inch above edge of starting strip of eave. The shingle is then nailed with one zinc clad nail in hole punched in the lower right hand corner. If lower hole comes over crack in sheathing, use hole above it.

The next shingle is laid by slipping the projecting lug on lower left hand corner of shingle under

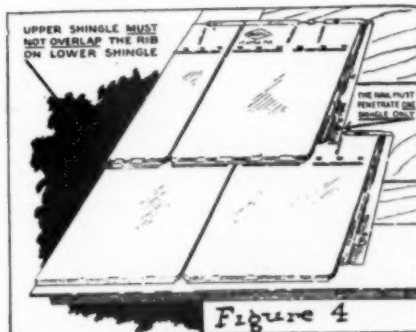
the lower right hand corner of first shingle and bringing in position, with butt of shingle on line, with the butt of the first shingle. The



left hand edge of second shingle should fit snugly in the gutter of the first shingle and lay flat on the roof sheathing.

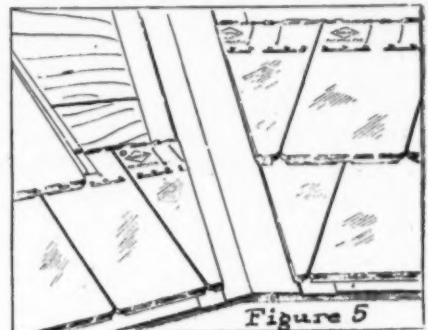


Second shingle is now nailed at the bottom as before. This holds the first shingle securely in place so that the left hand edge of first shingle, which projects over the starting strip, may be bent down over the starting strip of the gable to make a finished edge. If starting at a hip, bend first shingle over hip and nail. After second shingle is nailed in position proceed as before for rest of row.

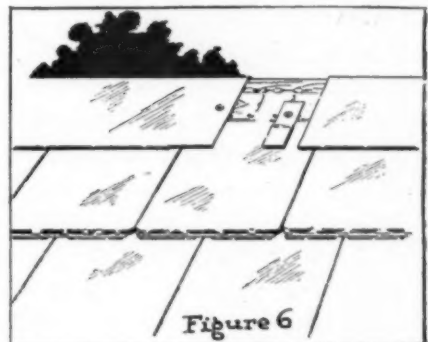


The next course of shingle is laid the same as the first, using a cut half shingle to start with. This new course should be lapped over the lower course, so that the lower

edge of the upper course covers the bottoms or indentations of the lower course just above the raised rib on each shingle. Use the raised rib as a guide for laying. This rib, however, should not be covered by the shingle above it.



Where roof is intersected by valleys, the shingles should be cut to line of valley sheets so that when they are in position the edge of shingle will project about $\frac{3}{4}$ inch over rib of valley. After shingle is in position, the projecting edge should be bent under rib of valley sheet. Where necessary at valleys, the shingle may be nailed at the top to hold in position.



Ridge.—The formed ridge cap is furnished 3 feet—0 inches lengths with an expansion joint or lap of three inches (3 inches). The under-lap not exposed to the weather should be nailed in place after the ridge cap has been slipped under the small zinc lugs.

The lugs are furnished with the ridge cap and should be nailed over and through the shingle at ridge, with lower end projecting toward eave the proper distance from center line of ridge to hook into and to hold ridge cap in place.

There should be three of these lugs on each side of the ridge to each section of ridge cap.

Hips.—If hip frame has not been

built up to permit a flashing of shingle against it, then snip edge of shingle to a flat position and lap over the hip joint and nail in place. Use same method on opposite side of hip, lapping edge of shingle over the joint. Then apply hip cap the same as explained under ridge (Figure 6).

Flashing.—The shingle can be snipped and easily flashed to dormers, chimneys, etc., by bending shingle up and counterflashing, or by using special flashing strips.

Don't use solder. If these instructions are followed, solder is not required.

Don't expose nails or nail through ridge strip.

Don't use any other metal in contact with zinc. Always use zinc against zinc to obtain best results.

Don't use any less care with this roof than with any other good roof.

Don't nail through two shingles at any place.

Explains How to Construct Ornamental Eave Finish.

Written Especially for American Artisan and Hardware Record by L. S. Bonbrake, Peoria, Illinois.

When something somewhat out of the ordinary is wanted for the finish of the ledge over a store front or other similar work close to the ground, as perhaps an unusually elaborated front porch, we suggest an ornamental finish, as apt to attract the eye in a pleasing manner.

It is made by cutting strips of tin $1\frac{1}{2}$ inches wide. Draw a line through all the strips required to run the eave, three-eighth inch from one edge.

Set a pair of compasses at $1\frac{1}{8}$ inch and describe arcs with prongs, alternately, from the line which will give true scallops from the base to apex.

Shear the tin around them away.

Form the $\frac{3}{8}$ -inch edge to a right angle from the burr made on the edge of the scallops by cutting which will throw the burr to the front to carry away all drip.

Another lot of strips are cut $2\frac{1}{4}$ inches wide, upon one edge of which

a bead is formed, and the regular flat seam tin roofing edge upon the other.

Nail the scalloped pieces upon the ledge first, then place the beaded pieces over them and nail to the ledge under the roofing hem, formed to engage more tin necessary to cover and flash the ledge or other surface.

Continuous Sheet and Eave Extension.

The eave finish gives an extension that will stand almost any test.

To form it on the roof strip (for standing seam roofing) cut in from both sides of the strip $1\frac{1}{4}$ inches from the eave end to a depth that will equal the height of the flanges to be formed up for making the standing seam.

The end of the strip is turned over and formed from its end back upon itself $1\frac{1}{4}$ inch.

An inch is then formed straight up from this fold and when the end of the roof strip is turned over to its proper position again, both projection and an eave nailing flange will be found prepared.

Commercial enrichment can be bought to go under the bead instead of the scallops, if desired, for an ornamental eave finish.

Notes and Queries

Address of Blackstone Manufacturing Company.

From W. Siefert, 3758 Armitage Avenue, Chicago, Illinois.

Can you tell me where the Blackstone Manufacturing Company is located?

Ans.—Jamestown, New York.

Colored Cement.

From Harry A. Bailey, 54 West Main Street, Newark, Ohio.

Will you kindly advise me who manufactures the different shades of cement that are used to put in the joints of terra cotta coping.

Ans.—Clinton Metallic Paint Company, Clinton, New York, and C. A. Woolsey Paint and Color Company, 490 Grand, Jersey City, New Jersey.

Gas Burning Furnaces.

From C. S. Elliott, Box 1473, Casper, Wyoming.

Please advise me who makes straight gas burning furnaces.

Ans.—Wise Furnace Company, Akron, Ohio; Heckler Brothers, 919 Liberty Avenue, Pittsburgh, Pennsylvania; Pennsylvania Furnace and Stove Company, Warren, Pennsylvania; and Guardian Gas Appliance Company, 3409 Superior Street, Cleveland, Ohio.

Second Hand Tinshop Tools.

From E. J. McSorley, Box 187, Bancroft, Michigan.

Where can I get second hand tin shop tools?

Ans.—Maplewood Machinery Company, 2547 Fullerton Avenue, and B. L. Saltzman, 524 West Van Buren Street; both of Chicago, Illinois. Also refer to Wants and Sales columns of AMERICAN ARTISAN AND HARDWARE RECORD under "Tinnery Tools."

Stamped Tin and Aluminum Ware.

From A. L. Stapleton, May and Stapleton, Care of Baldwin Hotel, Hutchinson, Kansas.

Can you inform me who manufactures stamped tin and aluminum ware?

Ans.—I. Geuder, Paeschke and Frey Company, 1314 St. Paul Avenue, Milwaukee, Wisconsin; National Enameling and Stamping Company, 346 West Kinzie Street, Chicago, Illinois; Republic Metalware Company, 1532 South Wabash Avenue, Chicago, Illinois. 2. Geuder, Paeschke and Frey Company, 1314 St. Paul Avenue, Milwaukee, Wisconsin; Aluminum Goods Manufacturing Company, Manitowoc, Wisconsin; Aluminum Ware Manufacturing Company, Incorporated, Elmira, New York.

Tool for Taking Dents Out of Mud Guards.

From H. J. Fischer, 807 Ridge Street, McKeesport, Pennsylvania.

Kindly let me know who manufactures a tool or machine for taking dents out of mud guards.

Ans.—Stiles Manufacturing Company, 4423 Gravois Avenue, St. Louis, Missouri.

Do you ever look over your store and stock with the eyes of a customer, trying to see things as an outsider sees them? If you can do that, you can discover some of your faults.

Descriptive Index and Guide to New Patents.

Improved Devices Which May Save Labor in Your Shop
or Add Another Source of Income to Your Retail Store.

1,413,692. Combination Tie and Collar Fastener. Howard Stanley Smith, Winnipeg, Manitoba, Canada. Filed June 1, 1920.

1,413,769. Replaceable Knife and Jaw for Pliers. Charles O'Reardon, Oakland, Calif. Filed March 8, 1920.

1,413,798. Combination Tool. George D. Shinn, Russellville, Ark. Filed January 11, 1921.

1,413,814. Separable Tool and Holder. Albert A. Waterman, Mansfield, Mass., assignor to Harding Manufacturing Co., Mansfield, Mass., a Corporation of Massachusetts. Filed February 9, 1921.

1,413,825. Washing Machine. Walter S. Benedict, Cleveland, Ohio. Filed August 2, 1921.

1,413,874. Egg Beater. Maurice H. Roberts, Boston, Mass., assignor to Harris Company, Inc., Boston, Mass., a Corporation of Massachusetts. Filed August 11, 1921.

1,414,400. Radiator Core. John Sorensen, Ottawa, Ill. Filed October 4, 1920.

1,414,468. Washing Machine. Charles W. Hottmann, Jr., Sandusky, Ohio, assignor to The Brown Clutch Co., Sandusky, Ohio, a Corporation of Ohio. Filed February 18, 1922.

1,414,551. Wringer Supporting Mechanism for Washing Machines. James L. Coffield, Dayton, Ohio. Filed December 13, 1920.

1,414,646. Safety Razor. Philip Iroff, Brooklyn, N. Y. Filed June 27, 1921.

1,414,704. Underreamer. Edgar H. Newkirk, Tulsa, Okla. Filed May 26, 1921.

1,414,839. Wrench. Arthur Stuarts, Pleasantville, N. Y. Filed September 26, 1919.

1,414,974. Single Blade Plane. Hans Anderson, Oakland, Calif. Filed November 22, 1921.

1,415,349. Stove. August Holmquist, Monroe, Wash. Filed October 13, 1921.

1,415,389. Ratchet Attachment for Screw Drivers. William H. Puhl, Zion City, Ill. Filed September 22, 1920.

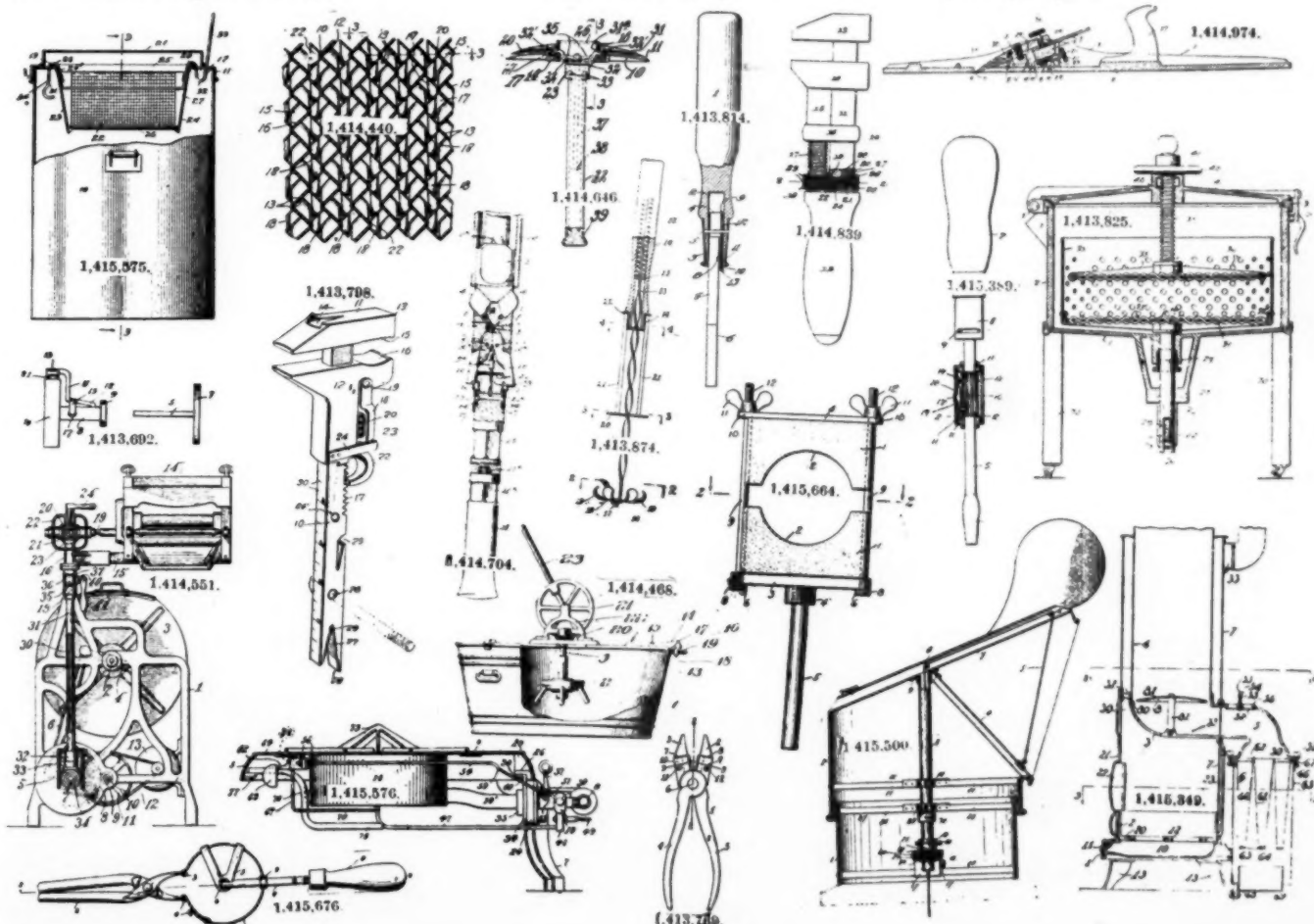
1,415,500. Ventilator. Ezekiel Van Noorden, Brookline, Mass., assignor to E. Van Noorden & Co., Boston, Mass., a Voluntary Trust Association. Filed May 6, 1920.

1,415,575. Ash Sifter. Meyer Kamenstein, New York, N. Y. Filed July 28, 1921.

1,415,576. Gas Stove. James E. Kennedy, Washington, D. C. Filed December 23, 1920.

1,415,664. Grinding Tool. Paul Uclair Lovelace, Clinton, Okla. Filed July 16, 1921.

1,415,676. Can Opener. Chailie E. Morgan, Rockville, Ind. Filed April 27, 1921.



Review of Conditions in the Metal Markets.

General Situation in the Steel Industry. Report of Prices and Tendencies in Sheet Metals, Pig Iron, etc.

DEMAND FOR COPPER IS MORE ACTIVE.

A much stronger tone characterizes the copper market this week.

Producers who were quoting copper in wholesale lots at 13¾ cents per pound a week ago have withdrawn their price in favor of a higher quotation.

No great change has taken place either in the production of blister or of fine copper.

The refinery output is still at the rate of about 100,000,000 pounds a month, 70,000,000 to 75,000,000 pounds of which is accounted for by domestic smelters and 25,000,000 to 30,000,000 pounds by imports, principally from South American mines.

Deliveries to domestic consumers on previous sales are at the rate of about 80,000,000 to 85,000,000 monthly.

Export, which amounted to approximately 65,000,000 pounds in May, probably will not be higher than 55,000,000 pounds for June, although it is still too early to make any definite estimate.

Many of the larger domestic consumers anticipated their June and July requirements in April and are now temporarily out of the market.

A new buying movement of copper from domestic consumers may be expected in the early Fall months.

A little later foreign demand should increase because of the big hydro-electric developments planned for France and Italy.

Improving business conditions in England also indicate increased buying from that quarter.

Germany's position is made a little less secure or clear because of the failure of the loan project but financial conditions in Germany for months have been about as bad as they possibly could be.

In fact, Russia and Germany pro-

vide tremendous uncertainties in both a business and political sense.

Meanwhile the publicity campaign of the Copper & Brass Research Association is gathering force.

Householders and business men are awakening to the enormous wastes in repairs and replacements caused by substitutes in place of copper.

Tin.

During the early part of the week, frequent fluctuations in Sterling exchange caused almost hourly variations in the market price of tin.

From the close of London trading Friday, June 23rd, to the close, Monday, June 26th, sterling dropped almost 4 cents and then a spectacular advance all but wiped out this loss.

It is generally expected that the world's visible supply has increased during the month because not only have the Straits shipments been heavy (3,950 tons to June 15 and estimated at 5,500 to 6,000 tons for the whole month) but a larger supply of Banca than usual is said to have come into sight.

A small increase in the visible supply would probably have little effect on the market because this is said to have already been discounted.

But if it amounts to 1,500 tons or more to a total of over 24,000 tons it may cause operators to stop and do some thinking.

Lead.

The majority of lead producers are well pleased with the recent curbing of the market through offerings of reserve stocks, and the position is undoubtedly all the sounder for it.

It is believed that the present rate of consumption is still causing a reduction of stocks through contract

shipments, though new orders are less plentiful; and the latter condition is regarded as partly seasonal.

In the Chicago market, the price of American pig lead went down from \$6.15 to \$6.10 per hundred pounds and of bar lead from \$6.90 to \$6.85 per hundred pounds.

Solder.

No changes are reported in Chicago solder prices, which are as follows:

Warranted, 50-50, per 100 pounds, \$22.00; Commercial, 45-55, per 100 pounds, \$20.50; and Plumbers', per 100 pounds, \$19.25.

Zinc.

The impending walkout of railroad workers and the continuing coal strike are checking active buying of zinc, and, from present indications, real activity must await the clearing up of the difficulties.

A feature of the zinc market during the past week was the resumption in buying by the brass trade after being virtually absent from the zinc market as buyers for a year, scrap stocks having taken the place of the new metal.

Reports from Joplin state that ore purchased the past week was 2,000 tons less than the average for the past three weeks; and offerings were lowered \$1 per ton on all grades of zinc sulphide ore.

Sheets.

While there has been a slight decrease in sheet production in the past week or two production is still very heavy, and the production of black sheets is far in excess of the highest rate attained before the war.

The independent sheet mills are now running at an average of 85 per cent of capacity, against about 87 per cent in May, 75 per cent in April.

The leading interest, which for nearly three months maintained a steady schedule of operating 90 per

cent of its sheet mills, went back last week, with an operation averaging between 86 and 87 per cent.

The leading interest's sales in the past three months have been heavy, making a favorable comparison, in general, with the best records of the past.

Now, with much of the prospective output of the third quarter sold, and with prices lower than are being quoted by the general run of independents, the company experiences no difficulty in making sales, its chief care being to allot its tonnage, and in many cases buyers do not secure as much tonnage as they inquire for.

Sales by independents are fairly heavy, and considering the difference in price the sales are remarkably good.

In April the independents sold a tonnage equal to 107 per cent of their capacity, while their production was 75 per cent of capacity, while in May the sales were 70 per cent and production 87 per cent.

With moderately heavy sales now, and with business on books June 1st equal to 1.44 months of full production, or two months at a 72 per cent operating rate, the independents are very well booked ahead.

Tin Plate.

The tin plate market is very firm on the basis of the regular price of \$4.75, which the leading interest on June 2nd confirmed for the second half of the year.

Quantity differentials made by independents are much smaller than was the case with sales made for the present half year, and are hardly equal to the concessions commonly made before the war.

In fact, it appears that \$4.65 is substantially the minimum among the independents, even for very attractive orders.

Sheet bar supplies for the tin plate mills have been better in the past few weeks than was expected when sheet bar production was cut down so much early in the coal strike.

The Carnegie Steel Company is now running Mingo and Farrell

practically full, and is even figuring on a resumption at Bellaire in the not distant future.

The American Sheet & Tin Plate Company last week operated about 77 per cent of its tin plate mills, against a previous schedule, maintained for two or three months, at 80 per cent, while the independents on the whole are operating at about 75 per cent of theoretically full, which means a trifle more than 75 per cent of practical capacity.

Old Metals.

Wholesale quotations in the Chicago district which should be considered as nominal are as follows: Old steel axles, \$15.50 to \$16.00; old iron axles, \$21.50 to \$22.00; steel springs, \$15.50 to \$16.00; No. 1 wrought iron, \$13.50 to \$13.00;

No. 1 cast, \$15.50 to \$16.00 all per net tons. Prices for non-ferrous metals are quoted as follows, per pound: Light copper, 8½ cents; light brass, 4½ cents; lead, 4¼ cents; zinc, 2½ cents; and cast aluminum, 12 cents.

Pig Iron.

Now that the July 1st reduction of 10 per cent in freight rates is about in effect, releases against running contracts for pig iron are growing in volume while a healthy increase in the melt of special industries is one of the most encouraging factors today.

Manufacturers of heating apparatus, textile machinery, electrical and railroad equipment and machine tools are the heaviest iron buyers at present.

Development of Steel Production Is Checked by an Increasing Scarcity of Labor and Fuel.

The Shortage of Labor Is Not Confined to the Unskilled Workers, but Extends into the Ranks of Trained Craftsmen.

EXTENSION of production in the steel industry has been checked by an increasing shortage of labor and fuel. So far no curtailment in production has actually developed from these causes, but certain schedules for increasing output have been temporarily abandoned on their account.

In certain mills the labor question is becoming a real factor not only in common labor but on up through the skilled classes.

One sheet mill reports that it could use 1,000 additional men if they were available.

In many instances this is due to higher wages paid in other industries, among which is particularly noted the railroad equipment manufacturers, who are reported to be paying common labor as high as 40 cents an hour.

The coal strike has now completed its twelfth week with no visible signs of weakening on either side, and but slight change as to the number of miners remaining at work is noted.

Congestion on certain railroads, is also adding to the burden of many fuel consumers, and coke shortage has forced the Chenango Furnace Company, to bank its No. 1 stack for a few days, while the Midvale Steel & Ordinance Company, has been forced to delay the blowing in of a second stack at Coatesville. Iron and steel makers see their fuel costs increasing, as they find it necessary to buy larger quantities of coal in the open market.

In many instances, furnace interests find that the cut in iron ore prices was not as great as the reduction they had previously made in inventory.

In the light of increased cost of production, the reduction, of 10 per cent in freight rates becomes insignificant.

There was no change in the price of finished steel products during the past week, but an advance in shapes, plates and bars is expected.

These three products compose the strongest group in steel at the present time.

Current Hardware and Metal Prices.

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

METALS

FIG IRON.

Chicago Foundry.....	23 70
Southern Fdy. No. 2.....	25 16
Lake Sup. Charcoal.....	25 50
Malleable	23 70

FIRST QUALITY BRIGHT TIN PLATES.

	Per Box
IC 14x20 112 sheets	\$10 00
IX 14x20.....	11 25
IXX 14x20.....	12 60
IXXX 14x20.....	13 90
IXXXX 14x20.....	15 25
IC 20x28.....	20 00
IX 20x28.....	22 50
IXX 20x28.....	25 20
IXXX 20x28.....	27 80
IXXXX 20x28.....	30 50

COKE PLATES.

Cokes, 180 lbs...	20x28 \$11 80
Cokes, 200 lbs...	20x28 12 00
Cokes, 214 lbs...IC	20x28 12 35
Cokes, 270 lbs...IX	20x28 14 10

BLUE ANNEALED SHEETS.

Base.....	per 100 lbs. \$3 33
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ONE PASS COLD ROLLED BLACK.

No. 18-20.....	per 100 lbs. \$4 25
No. 22-24.....	per 100 lbs. 4 30
No. 26.....	per 100 lbs. 4 35
No. 27.....	per 100 lbs. 4 40
No. 28.....	per 100 lbs. 4 45
No. 29.....	per 100 lbs. 4 55

GALVANIZED.

No. 16.....	per 100 lbs. \$4 70
No. 18-20.....	per 100 lbs. 4 85
No. 22-24.....	per 100 lbs. 5 00
No. 26.....	per 100 lbs. 5 15
No. 27.....	per 100 lbs. 5 30
No. 28.....	per 100 lbs. 5 45
No. 30.....	per 100 lbs. 5 95

BAR SOLDER.

Warranted.	50-50.....per 100 lbs. \$22 00
Commercial.	45-55.....per 100 lbs. 20 50
Plumbers.....	per 100 lbs. 19 25

ZINC.

In Slabs	5 90
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SHEET ZINC.

Cask lots, stock.....	3 1/2 c
Less than cask lots.....	9

COPPER.

Copper Sheets, base.....	20 1/2 c
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LEAD.

American Pig	6 10
Bar	6 85

Sheet.

Full coils	per 100 lbs. 9 00
Cut coils	per 100 lbs. 9 25

TIN.

Pig tin.....	per lb. 33 c
Bar tin.....	per lb. 35 c

HARDWARE, SHEET METAL SUPPLIES, WARM AIR HEATER FITTINGS AND ACCESSORIES.

ADZES.

Coopers'.	
Barton's	Net
White's	Net

AMMUNITION.

Shells, Loaded, Peters.	
Loaded with Black Powder 18%	
Loaded with Smokeless Powder	18%
Winchester.	
Smokeless Repeater	
Grade	20 & 4%
Smokeless Leader	
Grade	20 & 4%
Black Powder	20 & 4%
U. M. C.	
Nitro Club	20 & 4%
Arrow	20 & 4%
New Club	20 & 4%

Gun Wads—per 1000.

Winchester 7-8 gauge 10 & 7 1/4 %	
" 9-10 gauge 10 & 7 1/4 %	
" 11-28 gauge 10 & 7 1/4 %	

ASBESTOS.

Paper up to 1/16.....	6c per lb.
Rollboard	6 1/2 c per lb.
Millboard 3/32 to 1/4.....	6c per lb.
Corrugated Paper (250 sq. ft. to roll).....	\$6.00 per roll

AUGERS.

Boring Machine.....	40 & 10%
Carpenter's Nut	50%
Hollow.	
Bonney's.....	per doz. \$20 00
Post Hole.	
Iwan's Post Hole and Well	
Vaughan's, 4 to 9 in., with-	
out handles per doz.	\$14 00

AWLS.

Brad.	
No. 3 Handled.....	per doz. \$0 65
No. 1050 Handled	" 1 40
Patent astd'd, 1 to 4	" 35
Harness.	
Common	per doz. \$1 05
Patent	" 1 00
Peg.	
Shouldered	" 1 60
Patented	" 75
Scratch.	
No. 18, Socket	
Handled	per doz. \$2 50
No. 344 Goodell.	
Pratt, list less.....	35-40%
No. 7 Stanley.....	per doz. \$2 25

AXES.

First Quality, Single	
Bitted (unhandled), 3 to	
4 lb., per doz.....	\$10 50
Good Quality, Single	
Bitted, same weight, per	
doz.....	9 50

BALANCES, SPRING.

Universal.	
Sight Spring.....	List less 25%
Straight	List less 25%

BARBS, WRECKING.

V. & B. No. 12.....	\$0 45
V. & B. No. 24.....	0 75
V. & B. No. 324.....	0 80
V. & B. No. 30.....	0 85
V. & B. No. 330.....	0 90

BEVEL, TEE.

Stanley's Rosewood handle, new	
list	Nets
Stanley Iron handle.....	Nets

BINDING CLOTH.

Zinc	55%
Brass	40%
Brass, plated	60%

BITS.

Auger.	
Jennings Pattern.....	Net
Ford Car.....	25% off
Ford's Ship.....	25% off
Irwin	35%
Russell Jennings.....	less 10%
Clark's Expansive.....	33 1/4%
Center	10%

Countersink.

American	Snailhead.....	1 75
"	Rose	2 00
"	Flat	1 40

Dowel.

Russel Jennings	plus 20%
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Gimlet.

Standard Double Cut Gross	\$3 40
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Nail Metal Single	
Cut	Gross \$4 00—\$5 00

Reamer.

Standard Square.....	Doz. \$2 50
American Octagon.....	" 2 50

Screw Driver.

No. 1 Common.....	Each 18c
No. 26 Stanley.....	Each 70c

BLADES, SAW.

Wood.	
Atkins 30-in.	
Nos.	6 40 26
"	\$2 90 \$9 45 \$5 40
Diston 30-in.	
Nos.	6 66 26
"	\$9 45 \$10 05 \$9 45

BLOCKS.

Wooden	20%
Patent	20%

BLOW TORCHES (See Firepots).

BOARDS.

Stove.	Per. Doz.
26x26, wood lined.....	\$14 45
28x28, "	16 95
30x30, "	19 00
26x26, paper lined.....	8 15
28x28, "	9 10
30x30, "	10 80

Wash.

No. 760, Banner Globe	
(single)	per doz. \$5 25
No. 652, Banner Globe	
(single)	per doz. 675
No. 801, Brass King, per doz.	8 25
No. 860, Single—Plain	
Pump	6 25

BOLTS.

Carriage, Machine, etc.	
Carriage, cut thread, 1/4x6	
and sizes smaller and	
shorter	60%
Carriage sizes, larger and	
longer than 1/4x6.....	50 & 5%
Machine, 1/4x4 and sizes small-	
er and shorter	60 & 10%
Machine, sizes larger and	
longer than 1/4x4.....	50-10 & 5%
Stove	80%
Mortise, Door.	
Gem, iron	5%
Gem, bronze plated.....	5%

Barrel.

Cast	Net
Wrought	"
Wrought, bronzed	"

Flush.

Wrought	Net
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Spring.

Wrought	"
Wrought, heavy	"

Square.

Wrought	"
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BOXES.

Mail. No. 2	4 10
Per doz.....	\$18 00 \$23 00 \$29 00

Cast Iron.

Per doz.....	\$9 50
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Mitre.

Stanley's.....	Net Prices
Stearns, No. 2.....	per doz. \$45 00

BRACES, RATCHET.

Goodell-Pratt No. 408.....	\$4 60
" " No. 410.....	4 80
" " No. 412.....	5 00
V. & B. No. 444 8 in.....	4 55
V. & B. No. 333 8 in.....	4 20
V. & B. No. 222 8 in.....	4 20
V. & B. No. 111 8 in.....	3 50
V. & B. No. 11 8 in.....	3 05

BURRS, RIVETING.

Copper Burrs only.....	50%
Tinners' Iron Burrs only.....	Net

BUTTS.

Steel, antique copper or dull	
brass finish—case lots—	
3 1/2x3 1/2.....	per dozen pairs \$2 75
4x4.....	3 80

Heavy Bevel steel inside

sets, case lots—	
.....per dozen sets	7 50

Steel bit keyed front door	
sets, each	1 80

Wrought brass bit keyed	
front door sets, each.....	3 25

Cylinder front door sets,	
each	7 00

CALIPERS.

Double	Net
Inside and Outside	"
Wing	"

CARRIERS.

Hay.	
Diamond, Regular.....	each, nets
Diamond, Sling.....	" "

CASTERS.

Standard—Ball Bearing.	
.....	50 & 10%
Bed	40%
Common Plate.	
Brass Wheel	15%
Iron and porcelain wheels,	
new list	50%
Philadelphia Plate, new	
list	50%
Martin's	40%

CATCHERS, GRASS.

No. 1608.....	per doz. \$12 25
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CEMENT, FURNACE.

American Seal, 5 lb. cans, net	\$0 45
" " 10 lb. cans, net	30
" " 25 lb. cans, net	1 37
Asbestos, 5 lb. cans.....	45
Pecora, 5 lb. cans.....	45
" 10 lb. cans.....	90
" 25 lb. cans.....	1 37

CHAINS.

Breast Chains.	
With Slide.....	doz. pairs, \$5 50
Without Slide.....	" 5 06
Doublestack	" 9 35
With Covert Snaps	" 6 33
Picture Chains.	
Light brass, 3 ft., per doz.	1 25
Heavy brass, 3 ft.	1 75
Sash Chain. (Morton's)	
Steel, per 100 ft.	\$2 50
0	2 10
2	3 60
1	5 40
Champion Metal.	
2R	5 60
2R	5 60
1R	7 75
Champion Metal.—Extra Heavy.	
1H	\$9 50
Cable Sash Chains.	
Steel.....	List Net Plus 15%

CHALK, CARPENTERS'.

Blue	per gro. \$2 00
Red	" 2 00
White	" 1 80
Common White School	
Crayon	0 30

CHIMNEY TOPS.

In bags.....	per bag \$1 80
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CHECK, DOOR.

Corbin	Net list
Russwin	Net list

CHISELS.

Cold.	
Good quality, 1/4 in., each	\$0 44
" 1/2 in., "	0 22
Diamond Point.	
V. & B. No. 15, 1/4 in.....	0 23
V. & B. No. 15, 1/2 in.....	0 48

Firmer Bevelled.

Round Nose.	
V. & B. No. 65, 1/4 in.....	0 33
V. & B. No. 65, 1/2 in.....	0 44
Socket Firmer.	
Cape.	
V. & B. No. 50, 1/4 in.....	0 29
V. & B. No. 50, 1/2 in.....	0 64

CHUCKS, DRILL.

Goodell's, for Goodell's Screw	
Drivers.....	List less 25-40%
Yankee, for Yankee Screw	
Drivers	\$6 00

CHURNS.

Anti-Bent Wood,	
Gal.	5 7 10
Each	\$2 00 \$4 60 4 85
Belle, Barrell.....	65 & 7 1/2%
Common Dash,	

CLEAVISES. Malleable .....10c lb.	FENCES, WOOD—50% off list. FENCING. Lawn fence, single space, 36-inch\$ 9 12 Lawn fence, single space, 42-inch 10 20 Lawn fence, double space, 32-inch 13 50 Lawn fence, double space, 42-inch 13 75 Field fence, 26-inch, No. 10 top and bottom 12 filling 26 50 Same, 6 filling 33 52 Field fence, 32-inch, No. 10 top and bottom 12 filling 30 34 Same, 6 filling 39 41	Tinner's Riveting, No. 1, 3 oz., each 80 Shoe, Steel, No. 1, 13 oz., each 73 Tack. Magnetic, No. 5, each 1 00	Clothes Line. Jannped .....per doz. 35c—1 00 Galvanized... " 65c—2 25 Conductor. Conductor hooks .....20-10% Milcor .....Net Corn. Common, riveted, red, per dz. Net Little Giant..... " "
CLIPPERS. No. 0 .....\$2 50 No. 1 3 25 No. 3 4 25	FILES AND RASPS. Heller's (American) .....70% American .....70% Arcade .....60 & 10% Black Diamond .....50-10% Eagle .....60-10% Great Western .....60 & 10% Kearney & Foot .....60 & 10% McClellan .....60 & 10% Nicholson .....50-10-10% Simonds .....60% J. Barton Smith .....50-10-5% X F .....Net List	HAMMERS, HEAVY. Farriers' .....20% Mason's, Single and Double Face...50% HANDLES. Agricultural Tool. 4 1/2-inch, plain...per doz. \$3 50 Auger. Common Assorted, per doz.\$0 75 Pratt's Adjustable, Nos. 1 & 2, per doz..... 6 00 Ives' Adjustable...per set 1 35	Grass. Common Nos. 1 3 5 7 Per doz. \$4 25 3 25 3 40 3 50 Hammock. With plate.....per doz. \$1 00 With screw..... 95 Picture .....50%&50%&10% Potato and Manure......Nets
CLIPS. Axe .....65&5% Damper. Acme, with tail pieces, per doz. ....\$1 25 Non Rivet tail pieces, per doz. 25 Non Rivet Clips..... 90 Hame 50c	FIRE POTS. Clayton & Lambert's— East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Ne- braska, Kansas, Oklahoma, Amarillo, San Angelo and La- redo, Texas.....55% West of above boundary line .....52% Turner Brass Works— Ea. No. 43 Kerosene-Gasolene Master Torch, 1 qt.....\$5 40 No. 48 Kerosene-Gasolene Master Torch, 1 qt..... 6 73 No. 95 Double Jet Torch, Gasolene, 1 qt..... 6 95 No. 30 Kerosene-Gasolene Torch, 1 qt. (new line). 6 48 No. 33 Single Jet Gasolene Torch, 1 qt..... 6 93	Auger. Common Assorted, per doz.\$0 75 Pratt's Adjustable, Nos. 1 & 2, per doz..... 6 00 Ives' Adjustable...per set 1 35 Axe. Hickory, No. 1...per doz. 3 00 Hickory, No. 2... " 2 00 1st quality, second growth 6 00 Special white, 2nd growth 4 50 Chisel. Hickory, Tanged, Firmer Assorted .....per doz. 55c Hickory, Socket Firmer, Assorted .....per doz. 70c Coal Pick .....40% Drifting Pick .....40% File, assorted......per doz. 30c Hammer and Hatchet. No. 1, per doz.....\$0 80 Second growth hickory, per doz. 1 20 Hay and Manure Fork, Han- dles, Strap and Ferrule. Screw Driver .....per doz. \$7 00 Assorted .....each 6c Shovel and Spade......Net	HOSE. Per Ft. 1/2-inch molded reel .....13 1/2c 1/2-inch 3 ply duck.....13 1/2c 1/2-inch 4 ply duck.....16c 1/2-inch 5 ply multiple.....10 1/2c
COLLARS, STOVE PIPE. Lacquered. Inches..... 5 6 7 Fancy pattern, per doz.....65c 75c \$4 00	FIRE POTS. Clayton & Lambert's— East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Ne- braska, Kansas, Oklahoma, Amarillo, San Angelo and La- redo, Texas.....55% West of above boundary line .....52% Turner Brass Works— Ea. No. 43 Kerosene-Gasolene Master Torch, 1 qt.....\$5 40 No. 48 Kerosene-Gasolene Master Torch, 1 qt..... 6 73 No. 95 Double Jet Torch, Gasolene, 1 qt..... 6 95 No. 30 Kerosene-Gasolene Torch, 1 qt. (new line). 6 48 No. 33 Single Jet Gasolene Torch, 1 qt..... 6 93	Hammer and Hatchet. No. 1, per doz.....\$0 80 Second growth hickory, per doz. 1 20 Hay and Manure Fork, Han- dles, Strap and Ferrule. Screw Driver .....per doz. \$7 00 Assorted .....each 6c Shovel and Spade......Net	IRON. Sad. Charcoal .....per doz. \$11 00 Common, polished, per 100 lbs. 7 75 No. 70 Asbestos.....\$1 50 net No. 100 " 1 75 net Common, nickel plated.. 8 25 Mrs. Pott's, No. 50 J. Enterprise, per set Nets No. 55 J, " " " No. 50 T, " " " No. 55 T, " " "
COMPASSES. Carpenters' .....15% COPPERS—Soldering. Pointed Roofing. 3 lb. and heavier...per lb. 40c 2 lb. 48c 1 1/2 lb. 45c 1 lb. 55c 1/2 lb. 60c	FIRE POTS. Clayton & Lambert's— East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Ne- braska, Kansas, Oklahoma, Amarillo, San Angelo and La- redo, Texas.....55% West of above boundary line .....52% Turner Brass Works— Ea. No. 43 Kerosene-Gasolene Master Torch, 1 qt.....\$5 40 No. 48 Kerosene-Gasolene Master Torch, 1 qt..... 6 73 No. 95 Double Jet Torch, Gasolene, 1 qt..... 6 95 No. 30 Kerosene-Gasolene Torch, 1 qt. (new line). 6 48 No. 33 Single Jet Gasolene Torch, 1 qt..... 6 93	Garage Door. (See Garage Door Hdw.) Conductor Pipe. Iwan's Perfection .....50% Milcor Perfection .....Net Eaves Trough. Steel hangers .....30% Triple twist wire.....10% Milcor Eclipse .....Net Milcor Triplex .....Net Milcor Milwaukee .....Net	JACKS. Wagon. Richard's No. 1...per doz. \$15 49 Oliver, Each .....\$0 60 \$0 80 Nos. 0 00 Standard, Each .....\$0 60 \$1 00 Nos. 1 2 Big Lift .....40% Tiger .....40%
CORD. Picture. White Wire.....60 & 5% Sash. Spot No. 7.....per lb. 65c Common, No. 7..... 40c	FIRE POTS. Clayton & Lambert's— East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Ne- braska, Kansas, Oklahoma, Amarillo, San Angelo and La- redo, Texas.....55% West of above boundary line .....52% Turner Brass Works— Ea. No. 43 Kerosene-Gasolene Master Torch, 1 qt.....\$5 40 No. 48 Kerosene-Gasolene Master Torch, 1 qt..... 6 73 No. 95 Double Jet Torch, Gasolene, 1 qt..... 6 95 No. 30 Kerosene-Gasolene Torch, 1 qt. (new line). 6 48 No. 33 Single Jet Gasolene Torch, 1 qt..... 6 93	Garage Door. (See Garage Door Hdw.) Conductor Pipe. Iwan's Perfection .....50% Milcor Perfection .....Net Eaves Trough. Steel hangers .....30% Triple twist wire.....10% Milcor Eclipse .....Net Milcor Triplex .....Net Milcor Milwaukee .....Net	KETTLES. Brass .....15% Cauldron .....40&5% Copper .....per lb. 27 Maslin .....40&10% Sugar .....50%
COTTERS, SPRING. All sizes .....87 1/2%	FIRE POTS. Clayton & Lambert's— East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Ne- braska, Kansas, Oklahoma, Amarillo, San Angelo and La- redo, Texas.....55% West of above boundary line .....52% Turner Brass Works— Ea. No. 43 Kerosene-Gasolene Master Torch, 1 qt.....\$5 40 No. 48 Kerosene-Gasolene Master Torch, 1 qt..... 6 73 No. 95 Double Jet Torch, Gasolene, 1 qt..... 6 95 No. 30 Kerosene-Gasolene Torch, 1 qt. (new line). 6 48 No. 33 Single Jet Gasolene Torch, 1 qt..... 6 93	Garage Door. (See Garage Door Hdw.) Conductor Pipe. Iwan's Perfection .....50% Milcor Perfection .....Net Eaves Trough. Steel hangers .....30% Triple twist wire.....10% Milcor Eclipse .....Net Milcor Triplex .....Net Milcor Milwaukee .....Net	KNIVES. Beet Topping. Clyde, 9-in. Scimitar Blade, doz. ....25% California .....25% Butcher. Beechwood Handles, 6-inch blade .....25% Beechwood Handles, 7-inch blade .....25% Beechwood Handles, 8-inch blade .....25% Cooper's Hoop.....25% Drawing. Standard .....25% Adjustable .....25% Barton's Carpenters' .....25%
COUPLINGS, HOSE Brass .....per doz. \$2 25	FIRE POTS. Clayton & Lambert's— East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Ne- braska, Kansas, Oklahoma, Amarillo, San Angelo and La- redo, Texas.....55% West of above boundary line .....52% Turner Brass Works— Ea. No. 43 Kerosene-Gasolene Master Torch, 1 qt.....\$5 40 No. 48 Kerosene-Gasolene Master Torch, 1 qt..... 6 73 No. 95 Double Jet Torch, Gasolene, 1 qt..... 6 95 No. 30 Kerosene-Gasolene Torch, 1 qt. (new line). 6 48 No. 33 Single Jet Gasolene Torch, 1 qt..... 6 93	Garage Door. (See Garage Door Hdw.) Conductor Pipe. Iwan's Perfection .....50% Milcor Perfection .....Net Eaves Trough. Steel hangers .....30% Triple twist wire.....10% Milcor Eclipse .....Net Milcor Triplex .....Net Milcor Milwaukee .....Net	KNIVES. Beet Topping. Clyde, 9-in. Scimitar Blade, doz. ....25% California .....25% Butcher. Beechwood Handles, 6-inch blade .....25% Beechwood Handles, 7-inch blade .....25% Beechwood Handles, 8-inch blade .....25% Cooper's Hoop.....25% Drawing. Standard .....25% Adjustable .....25% Barton's Carpenters' .....25%
CUT-OFFS Standard gauge.....35% 26 gauge.....20%	FIRE POTS. Clayton & Lambert's— East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Ne- braska, Kansas, Oklahoma, Amarillo, San Angelo and La- redo, Texas.....55% West of above boundary line .....52% Turner Brass Works— Ea. No. 43 Kerosene-Gasolene Master Torch, 1 qt.....\$5 40 No. 48 Kerosene-Gasolene Master Torch, 1 qt..... 6 73 No. 95 Double Jet Torch, Gasolene, 1 qt..... 6 95 No. 30 Kerosene-Gasolene Torch, 1 qt. (new line). 6 48 No. 33 Single Jet Gasolene Torch, 1 qt..... 6 93	Garage Door. (See Garage Door Hdw.) Conductor Pipe. Iwan's Perfection .....50% Milcor Perfection .....Net Eaves Trough. Steel hangers .....30% Triple twist wire.....10% Milcor Eclipse .....Net Milcor Triplex .....Net Milcor Milwaukee .....Net	KNIVES. Beet Topping. Clyde, 9-in. Scimitar Blade, doz. ....25% California .....25% Butcher. Beechwood Handles, 6-inch blade .....25% Beechwood Handles, 7-inch blade .....25% Beechwood Handles, 8-inch blade .....25% Cooper's Hoop.....25% Drawing. Standard .....25% Adjustable .....25% Barton's Carpenters' .....25%
CUTTERS. Glass. Red Devil.....Net	FIRE POTS. Clayton & Lambert's— East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Ne- braska, Kansas, Oklahoma, Amarillo, San Angelo and La- redo, Texas.....55% West of above boundary line .....52% Turner Brass Works— Ea. No. 43 Kerosene-Gasolene Master Torch, 1 qt.....\$5 40 No. 48 Kerosene-Gasolene Master Torch, 1 qt..... 6 73 No. 95 Double Jet Torch, Gasolene, 1 qt..... 6 95 No. 30 Kerosene-Gasolene Torch, 1 qt. (new line). 6 48 No. 33 Single Jet Gasolene Torch, 1 qt..... 6 93	Garage Door. (See Garage Door Hdw.) Conductor Pipe. Iwan's Perfection .....50% Milcor Perfection .....Net Eaves Trough. Steel hangers .....30% Triple twist wire.....10% Milcor Eclipse .....Net Milcor Triplex .....Net Milcor Milwaukee .....Net	KNIVES. Beet Topping. Clyde, 9-in. Scimitar Blade, doz. ....25% California .....25% Butcher. Beechwood Handles, 6-inch blade .....25% Beechwood Handles, 7-inch blade .....25% Beechwood Handles, 8-inch blade .....25% Cooper's Hoop.....25% Drawing. Standard .....25% Adjustable .....25% Barton's Carpenters' .....25%
MEAT. Enterprise—Nos. 5 10 12 Each .....\$2 50 \$4 25 \$3 75 " Nos. 22 32 "\$6 50 \$8 50	FIRE POTS. Clayton & Lambert's— East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Ne- braska, Kansas, Oklahoma, Amarillo, San Angelo and La- redo, Texas.....55% West of above boundary line .....52% Turner Brass Works— Ea. No. 43 Kerosene-Gasolene Master Torch, 1 qt.....\$5 40 No. 48 Kerosene-Gasolene Master Torch, 1 qt..... 6 73 No. 95 Double Jet Torch, Gasolene, 1 qt..... 6 95 No. 30 Kerosene-Gasolene Torch, 1 qt. (new line). 6 48 No. 33 Single Jet Gasolene Torch, 1 qt..... 6 93	Garage Door. (See Garage Door Hdw.) Conductor Pipe. Iwan's Perfection .....50% Milcor Perfection .....Net Eaves Trough. Steel hangers .....30% Triple twist wire.....10% Milcor Eclipse .....Net Milcor Triplex .....Net Milcor Milwaukee .....Net	KNIVES. Beet Topping. Clyde, 9-in. Scimitar Blade, doz. ....25% California .....25% Butcher. Beechwood Handles, 6-inch blade .....25% Beechwood Handles, 7-inch blade .....25% Beechwood Handles, 8-inch blade .....25% Cooper's Hoop.....25% Drawing. Standard .....25% Adjustable .....25% Barton's Carpenters' .....25%
PIPE. Saunders, Nos. 1 2 3 Each .....\$1 85 2 75 6 75	FIRE POTS. Clayton & Lambert's— East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Ne- braska, Kansas, Oklahoma, Amarillo, San Angelo and La- redo, Texas.....55% West of above boundary line .....52% Turner Brass Works— Ea. No. 43 Kerosene-Gasolene Master Torch, 1 qt.....\$5 40 No. 48 Kerosene-Gasolene Master Torch, 1 qt..... 6 73 No. 95 Double Jet Torch, Gasolene, 1 qt..... 6 95 No. 30 Kerosene-Gasolene Torch, 1 qt. (new line). 6 48 No. 33 Single Jet Gasolene Torch, 1 qt..... 6 93	Garage Door. (See Garage Door Hdw.) Conductor Pipe. Iwan's Perfection .....50% Milcor Perfection .....Net Eaves Trough. Steel hangers .....30% Triple twist wire.....10% Milcor Eclipse .....Net Milcor Triplex .....Net Milcor Milwaukee .....Net	KNIVES. Beet Topping. Clyde, 9-in. Scimitar Blade, doz. ....25% California .....25% Butcher. Beechwood Handles, 6-inch blade .....25% Beechwood Handles, 7-inch blade .....25% Beechwood Handles, 8-inch blade .....25% Cooper's Hoop.....25% Drawing. Standard .....25% Adjustable .....25% Barton's Carpenters' .....25%
SLAY AND KRAUT. Per doz. 4-knife Kraut.....\$20 00-55 00 3-knife Kraut, 8x27 in. ....13 00-18 00 1-knife Slaw..... 2 50 2-knife Slaw..... 3 00 Washer 11 00	FIRE POTS. Clayton & Lambert's— East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Ne- braska, Kansas, Oklahoma, Amarillo, San Angelo and La- redo, Texas.....55% West of above boundary line .....52% Turner Brass Works— Ea. No. 43 Kerosene-Gasolene Master Torch, 1 qt.....\$5 40 No. 48 Kerosene-Gasolene Master Torch, 1 qt..... 6 73 No. 95 Double Jet Torch, Gasolene, 1 qt..... 6 95 No. 30 Kerosene-Gasolene Torch, 1 qt. (new line). 6 48 No. 33 Single Jet Gasolene Torch, 1 qt..... 6 93	Garage Door. (See Garage Door Hdw.) Conductor Pipe. Iwan's Perfection .....50% Milcor Perfection .....Net Eaves Trough. Steel hangers .....30% Triple twist wire.....10% Milcor Eclipse .....Net Milcor Triplex .....Net Milcor Milwaukee .....Net	KNIVES. Beet Topping. Clyde, 9-in. Scimitar Blade, doz. ....25% California .....25% Butcher. Beechwood Handles, 6-inch blade .....25% Beechwood Handles, 7-inch blade .....25% Beechwood Handles, 8-inch blade .....25% Cooper's Hoop.....25% Drawing. Standard .....25% Adjustable .....25% Barton's Carpenters' .....25%
DAMPERS, STOVE PIPE. Diamond. 6-inch .....per doz. \$1 50	FIRE POTS. Clayton & Lambert's— East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Ne- braska, Kansas, Oklahoma, Amarillo, San Angelo and La- redo, Texas.....55% West of above boundary line .....52% Turner Brass Works— Ea. No. 43 Kerosene-Gasolene Master Torch, 1 qt.....\$5 40 No. 48 Kerosene-Gasolene Master Torch, 1 qt..... 6 73 No. 95 Double Jet Torch, Gasolene, 1 qt..... 6 95 No. 30 Kerosene-Gasolene Torch, 1 qt. (new line). 6 48 No. 33 Single Jet Gasolene Torch, 1 qt..... 6 93	Garage Door. (See Garage Door Hdw.) Conductor Pipe. Iwan's Perfection .....50% Milcor Perfection .....Net Eaves Trough. Steel hangers .....30% Triple twist wire.....10% Milcor Eclipse .....Net Milcor Triplex .....Net Milcor Milwaukee .....Net	KNIVES. Beet Topping. Clyde, 9-in. Scimitar Blade, doz. ....25% California .....25% Butcher. Beechwood Handles, 6-inch blade .....25% Beechwood Handles, 7-inch blade .....25% Beechwood Handles, 8-inch blade .....25% Cooper's Hoop.....25% Drawing. Standard .....25% Adjustable .....25% Barton's Carpenters' .....25%
DIGGERS. Post Hole. Iwan's Split Handle (Eureka) 4-ft. Handle...per doz. 15 00 7-ft. Handle...per doz. 20 00 Iwan's Hercules pattern, per doz. 18 00 Dividers, Wing .....25%	FIRE POTS. Clayton & Lambert's— East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Ne- braska, Kansas, Oklahoma, Amarillo, San Angelo and La- redo, Texas.....55% West of above boundary line .....52% Turner Brass Works— Ea. No. 43 Kerosene-Gasolene Master Torch, 1 qt.....\$5 40 No. 48 Kerosene-Gasolene Master Torch, 1 qt..... 6 73 No. 95 Double Jet Torch, Gasolene, 1 qt..... 6 95 No. 30 Kerosene-Gasolene Torch, 1 qt. (new line). 6 48 No. 33 Single Jet Gasolene Torch, 1 qt..... 6 93	Garage Door. (See Garage Door Hdw.) Conductor Pipe. Iwan's Perfection .....50% Milcor Perfection .....Net Eaves Trough. Steel hangers .....30% Triple twist wire.....10% Milcor Eclipse .....Net Milcor Triplex .....Net Milcor Milwaukee .....Net	KNIVES. Beet Topping. Clyde, 9-in. Scimitar Blade, doz. ....25% California .....25% Butcher. Beechwood Handles, 6-inch blade .....25% Beechwood Handles, 7-inch blade .....25% Beechwood Handles, 8-inch blade .....25% Cooper's Hoop.....25% Drawing. Standard .....25% Adjustable .....25% Barton's Carpenters' .....25%
DRILLS. Bench. Blacksmiths' Twist (New List) .....40%	FIRE POTS. Clayton & Lambert's— East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Ne- braska, Kansas, Oklahoma, Amarillo, San Angelo and La- redo, Texas.....55% West of above boundary line .....52% Turner Brass Works— Ea. No. 43 Kerosene-Gasolene Master Torch, 1 qt.....\$5 40 No. 48 Kerosene-Gasolene Master Torch, 1 qt..... 6 73 No. 95 Double Jet Torch, Gasolene, 1 qt..... 6 95 No. 30 Kerosene-Gasolene Torch, 1 qt. (new line). 6 48 No. 33 Single Jet Gasolene Torch, 1 qt..... 6 93	Garage Door. (See Garage Door Hdw.) Conductor Pipe. Iwan's Perfection .....50% Milcor Perfection .....Net Eaves Trough. Steel hangers .....30% Triple twist wire.....10% Milcor Eclipse .....Net Milcor Triplex .....Net Milcor Milwaukee .....Net	KNIVES. Beet Topping. Clyde, 9-in. Scimitar Blade, doz. ....25% California .....25% Butcher. Beechwood Handles, 6-inch blade .....25% Beechwood Handles, 7-inch blade .....25% Beechwood Handles, 8-inch blade .....25% Cooper's Hoop.....25% Drawing. Standard .....25% Adjustable .....25% Barton's Carpenters' .....25%
BREAST. Millers Falls No. 12, per doz. ....\$45 50 Millers Falls No. 112, per doz. 22 00	FIRE POTS. Clayton & Lambert's— East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Ne- braska, Kansas, Oklahoma, Amarillo, San Angelo and La- redo, Texas.....55% West of above boundary line .....52% Turner Brass Works— Ea. No. 43 Kerosene-Gasolene Master Torch, 1 qt.....\$5 40 No. 48 Kerosene-Gasolene Master Torch, 1 qt..... 6 73 No. 95 Double Jet Torch, Gasolene, 1 qt..... 6 95 No. 30 Kerosene-Gasolene Torch, 1 qt. (new line). 6 48 No. 33 Single Jet Gasolene Torch, 1 qt..... 6 93	Garage Door. (See Garage Door Hdw.) Conductor Pipe. Iwan's Perfection .....50% Milcor Perfection .....Net Eaves Trough. Steel hangers .....30% Triple twist wire.....10% Milcor Eclipse .....Net Milcor Triplex .....Net Milcor Milwaukee .....Net	KNIVES. Beet Topping. Clyde, 9-in. Scimitar Blade, doz. ....25% California .....25% Butcher. Beechwood Handles, 6-inch blade .....25% Beechwood Handles, 7-inch blade .....25% Beechwood Handles, 8-inch blade .....25% Cooper's Hoop.....25% Drawing. Standard .....25% Adjustable .....25% Barton's Carpenters' .....25%
HAND. Goodell's Automatic. No. 01.....each \$1 60 No. 03..... " 2 00 Goodell-Pratt No. 4 1/2 " 3 00 Goodell-Pratt No. 379. " 4 00	FIRE POTS. Clayton & Lambert's— East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Ne- braska, Kansas, Oklahoma, Amarillo, San Angelo and La- redo, Texas.....55% West of above boundary line .....52% Turner Brass Works— Ea. No. 43 Kerosene-Gasolene Master Torch, 1 qt.....\$5 40 No. 48 Kerosene-Gasolene Master Torch, 1 qt..... 6 73 No. 95 Double Jet Torch, Gasolene, 1 qt..... 6 95 No. 30 Kerosene-Gasolene Torch, 1 qt. (new line). 6 48 No. 33 Single Jet Gasolene Torch, 1 qt..... 6 93	Garage Door. (See Garage Door Hdw.) Conductor Pipe. Iwan's Perfection .....50% Milcor Perfection .....Net Eaves Trough. Steel hangers .....30% Triple twist wire.....10% Milcor Eclipse .....Net Milcor Triplex .....Net Milcor Milwaukee .....Net	KNIVES. Beet Topping. Clyde, 9-in. Scimitar Blade, doz. ....25% California .....25% Butcher. Beechwood Handles, 6-inch blade .....25% Beechwood Handles, 7-inch blade .....25% Beechwood Handles, 8-inch blade .....25% Cooper's Hoop.....25% Drawing. Standard .....25% Adjustable .....25% Barton's Carpenters' .....25%
RECIPROCATING. Goodell's 3 20	FIRE POTS. Clayton & Lambert's— East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Ne- braska, Kansas, Oklahoma, Amarillo, San Angelo and La- redo, Texas.....55% West of above boundary line .....52% Turner Brass Works— Ea. No. 43 Kerosene-Gasolene Master Torch, 1 qt.....\$5 40 No. 48 Kerosene-Gasolene Master Torch, 1 qt..... 6 73 No. 95 Double Jet Torch, Gasolene, 1 qt..... 6 95 No. 30 Kerosene-Gasolene Torch, 1 qt. (new line). 6 48 No. 33 Single Jet Gasolene Torch, 1 qt..... 6 93	Garage Door. (See Garage Door Hdw.) Conductor Pipe. Iwan's Perfection .....50% Milcor Perfection .....Net Eaves Trough. Steel hangers .....30% Triple twist wire.....10% Milcor Eclipse .....Net Milcor Triplex .....Net Milcor Milwaukee .....Net	KNIVES. Beet Topping. Clyde, 9-in. Scimitar Blade, doz. ....25% California .....25% Butcher. Beechwood Handles, 6-inch blade .....25% Beechwood Handles, 7-inch blade .....25% Beechwood Handles, 8-inch blade .....25% Cooper's Hoop.....25% Drawing. Standard .....25% Adjustable .....25% Barton's Carpenters' .....25%
DRIVERS, SCREW. Standard EAVES TROUGH. 75 and 15% of Standard List. Milcor .....Net	FIRE POTS. Clayton & Lambert's— East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Ne- braska, Kansas, Oklahoma, Amarillo, San Angelo and La- redo, Texas.....55% West of above boundary line .....52% Turner Brass Works— Ea. No. 43 Kerosene-Gasolene Master Torch, 1 qt.....\$5 40 No. 48 Kerosene-Gasolene Master Torch, 1 qt..... 6 73 No. 95 Double Jet Torch, Gasolene, 1 qt..... 6 95 No. 30 Kerosene-Gasolene Torch, 1 qt. (new line). 6 48 No. 33 Single Jet Gasolene Torch, 1 qt..... 6 93	Garage Door. (See Garage Door Hdw.) Conductor Pipe. Iwan's Perfection .....50% Milcor Perfection .....Net Eaves Trough. Steel hangers .....30% Triple twist wire.....10% Milcor Eclipse .....Net Milcor Triplex .....Net Milcor Milwaukee .....Net	KNIVES. Beet Topping. Clyde, 9-in. Scimitar Blade, doz. ....25% California .....25% Butcher. Beechwood Handles, 6-inch blade .....25% Beechwood Handles, 7-inch blade .....25% Beechwood Handles, 8-inch blade .....25% Cooper's Hoop.....25% Drawing. Standard .....25% Adjustable .....25% Barton's Carpenters' .....25%
ELBOWS—Conductor Pipe. Galvanized Steel, Tin and Terne Plate Round or Round Corrugated 2 to 6 inch, Std. gauge .65% 2 to 6 inch, 26 gauge .45% 2 to 6 inch, 24 gauge .15% Milcor .....Net	FIRE POTS. Clayton & Lambert's— East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Ne- braska, Kansas, Oklahoma, Amarillo, San Angelo and La- redo, Texas.....55% West of above boundary line .....52% Turner Brass Works— Ea. No. 43 Kerosene-Gasolene Master Torch, 1 qt.....\$5 40 No. 48 Kerosene-Gasolene Master Torch, 1 qt..... 6 73 No. 95 Double Jet Torch, Gasolene, 1 qt..... 6 95 No. 30 Kerosene-Gasolene Torch, 1 qt. (new line). 6 48 No. 33 Single Jet Gasolene Torch, 1 qt..... 6 93	Garage Door. (See Garage Door Hdw.) Conductor Pipe. Iwan's Perfection .....50% Milcor Perfection .....Net Eaves Trough. Steel hangers .....30% Triple twist wire.....10% Milcor Eclipse .....Net Milcor Triplex .....Net Milcor Milwaukee .....Net	KNIVES. Beet Topping. Clyde, 9-in. Scimitar Blade, doz. ....25% California .....25% Butcher. Beechwood Handles, 6-inch blade .....25% Beechwood Handles, 7-inch blade .....25% Beechwood Handles, 8-inch blade .....25% Cooper's Hoop.....25% Drawing. Standard .....25% Adjustable .....25% Barton's Carpenters' .....25%
Square Corrugated. Standard gauge .....50% 26 gauge .....35% Milcor .....Net	FIRE POTS. Clayton & Lambert's— East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Ne- braska, Kansas, Oklahoma, Amarillo, San Angelo and La- redo, Texas.....55% West of above boundary line .....52% Turner Brass Works— E		

LINES.		PAPER.		POINTS, GLAZIERS.		RIVETS.	
Jute	per lb. 25c	Roofing.	Per square	No. 1, 2 and 3	per doz. 75c	Copper Belt	50% Discount
Sisal	" 35c	Mayon, 1-ply	" 1 33	POINTERS, SPOKE.		Coppered Iron	50%
Cotton	" 52c	" 2-ply	" 2 24	Stearns' No. 1	per doz. \$10 00	Tinners'	50%
Braided Cotton	" 52c	" 3-ply	" 2 25	" No. 2	" 12 00	Hame	per lb. \$0 17
LINING, STOVE.		Red Rosin	per ton \$111 45	POKERS, STOVE.		Slotted Clinch	per doz. 60 @ 1 10
Bricks	per crate 42c	Sand and Emery.		Wrt Steel, str't or bent,		Tubular.	
LOCKS.		No. 1 per ream, best grade	\$5 40	Nickel Plated, coil han's	" 1 10	Nos. 1 and 2 assorted sizes,	50 in box.....doz. 75c
Horn Door.		No. 1, per ream, cheaper	grade 4 35	PRESSES, FRUIT AND JELLY		Nos. 1 and 2 assorted sizes,	10 in box.....doz. 1 40
No. 60 Stearns	per doz. \$12 00	Potato.		Enterprise Manufacturing Co, 25%			
No. 80	" 24 00	Goodell's Saratoga, 10 1/2	in. doz. 6 50	PRUNERS.		ROPE.	
MACHINES		Goodell's Saratoga, 5 in.	doz. 5 50	Disston's Pole	per doz. \$18 00	Cotton.	
Riveting.				Water's Improved,	per doz. 60%	5-16 in. Com. on reels,	
Stearns No. 1	per doz. \$16 00	PICKS.		Nail.		per lb. 80c	
Tenoning.		Adze Eye Ore	22 1/2%	Glant	per doz. \$14 50	5-16 in. Com. in coils,	
No. 50 Peace's Spoke, each	\$16 00	Drifting and Poll Picks	22 1/2%	Never-Slip	" 17 00	per lb. 80c	
MALLET.		Plumbs, Railroad	22 1/2%	PULLEYS.		Sisal.	
Carpenters.		Surface	22 1/2%	Awning-Jap'd	10%	1st Quality, base 14 1/2c to 15 1/2c	
Fibre Head, No. 2 per doz.	\$16 50	PINNERS.		Clothes Line	10%	No. 2.....13c to 14c	
No. 3	" 19 50	Carpenters', cast steel,		Hay Fork.		Manilla.	
No. 4	" 23 50	No. 6 8 10 12		Iron Wheel, 5-in. per doz.	\$2 50	1st Quality standard	
Round Hickory	per doz. \$3 00—5 00	Each \$0 56 0 72 \$0 93 \$1 03		Wood Wheel, 5-in.	" 2 65	brands 17 1/2c to 18 1/2c	
MATS.		Blacksmiths', No. 10.....\$0 96		Wood Wheel, 5-in.	" 3 00	No. 2.....16c to 16 1/2c	
Door.		Heller's.....List plus 10%		pass knot	" 3 00	Hardware Grade, per lb. 12 1/2c	
National Rigid	5&10&5%	PINS		PUMPS.		Pure Manilla.	
Acme Steel Flexible	50%	Clothes.		Common	per doz. \$3 75	1st Quality, base,	
MEASURES.		Common, per box of 5 gro.	\$0 95	New Misty	" 6 00	per lb. 17 1/2c to 18 1/2c	
Galvanized, doz.	Nets	PIPE.		Crescent	" 6 50	Hardware Grade, per lb. 11 1/2c	
Japanese, doz.	Nets	Plain Round and Round Corru-		PUNCHES.		Butchers'.	
MITRES.		gated.		Conductors.		Atkins No. 2, 14-in.	\$12 20
Galvanized steel mitres, and		29 Gauge	70&5%	No. 22	per doz. \$3 00	No. 2, 18-in.	13 70
caps, end pieces, outlets	30%	28 "	70&5%	Machine	per lb. 25	No. 7, 18-in.	15 20
Milcor	Net	26 "	70&5%	Saddlers'.		No. 2, 22-in.	15 25
MOPS.		24 "	70&5%	Common	per doz. \$1 50 to \$5 00	No. 7, 20-in.	17 30
Cotton, Star (Cut Ends).		Square Corrugated A and B and		Revolving Spring.		No. 7, 24-in.	19 35
Pounds 12/ 15/ 18/ 24/ 3-oz.		Octagon.		Stearns' No. 10	per doz. \$ 3 00	No. 7, 28-in.	21 40
Per doz. \$4 00 4 35 5 50 7 00		29 Gauge	70&5%	No. 40	" 16 00	Atkins No. 221, 4-ft.	2 70
Enterprise	15 1/2%	28 "	70&5%	No. 60	" 19 00	No. 221, 6-ft.	4 10
Parker	50&5%	26 "	70&5%	Parker Metal Punch No.		No. 221, 8-ft.	5 45
NAILS.		24 "	70&5%	OX	each \$7 00	Flooring.	
Cut Steel	\$4 45	Prices for Galvanized Toncan		Whitney's Ball Bearing		Atkins No. 96, 16-in.	19 95
Cut Iron	4 45	Metal, Genuine O. H. Iron, Lyon-		Prices on application		No. 96, 20-in.	21 35
Wire.		more Metal and Keystone C. B.		PARERS.		Hand and Rip.	
Common	3 10	on application.		Goodell's	per doz. \$10 80	Atkins No. 54, 20-in.	17 75
Cement Coated.		Plain Round and Round Corru-		Turntable	" 11 40	No. 54, 26-in.	22 10
Small Lots	2 65	gated.		White Mountain	" 8 40	No. 52, 18-in.	16 45
Horsehoe.		29 Gauge	40%	Reading No. 73	" 11 40	No. 53, 20-in.	20 80
Ausable	55&5%	28 "	35%	PUTY.		No. 53, 24-in.	24 30
Capewell	15%	26 "	30%	Commercial Putty, 100-lb.		No. 53, 28-in.	28 60
Perfect	55&5%	24 "	30%	kits	\$4 75	No. 53, 30-in.	31 95
Futnam	20&5%	Square Corrugated A and B		RAKES.		Keyhole.	
Star	30&5%	Polygon and Octagon.		Garden		Atkins No. 1, complete	2 80
Picture.		29 Gauge	40%	Steel, Bow, 12-inch Teeth	\$3 50	No. 2, complete	3 35
Brass Heads	25%	28 "	35%	Steel, Bow, 14-inch	" 9 25	Miter Box.	
Brads	50&5%	26 "	30%	Malleable Iron, 12-in.	" 4 75	Atkins No. 1, 4x20	29 70
Furniture	List plus 15%	24 "	30%	Malleable Iron, 14-in.	" 5 00	No. 1, 5x22	24 55
NETTING, POULTRY.		14 and 16-oz. Copper, all de-		SCYTHES.		No. 1, 6x22	38 35
Galvanized before weaving	50%	signs	10%	Hubbard Western Eastern Riveted.		Pruning.	
Galvanized after weaving	40%	Milcor, all styles and gauges, Not		Size A B C D		Atkins No. 20, 12-in.	7 70
NIPPERS.		Standard Gauge.		1.. \$16 75 16 00 15 25 14 45		No. 10, 16-in.	16 50
End Cutting.		Crated and nested	70&5%	4.. 17 85 17 10 16 35 15 60		Wood.	
Berg's (Swedish) In. 5	6	Crated, not nested	70&5%	6.. 18 65 17 85 17 10 16 35		Atkins No. 202	8 50
Per dozen	\$12 60 15 20	Portico Elbows.		SCRAPERS.		No. 313	10 05
End and Diagonal Cutting.		Standard Gauge Conductor Pipe,		Box.		No. 908	15 65
Berg's (Swedish) In. 6	6	plain or corrugated.		Triangular No. 6 per doz.	\$6 25	No. 1509	18 40
Per dozen	\$10 05 13 00	Not Nested	70&5%	Road.		SCREEN DOOR HINGES.	
Hoof.		Nested solid	70&5%	Cubic ft.	7 5 3	Cast iron	gross \$13 00
Heller's	40&10%	NOZZLES.		With runners, ea.	\$7 00 6 50 6 20	Steel	" 9 50
V. & B., No. 52, each	\$2 25	26 gauge, 5 inch E. C.		SCREWS.		Bench.	
OPENERS.		26 gauge, 6 inch E. C.		Iron, Ins. 1 1 1/4 1 1/4		No. 1, 1 1/4	1 1/4
Can.		26 gauge, 7 inch E. C.		\$6 82 7 37 9 45 16 30		Wood, white maple, per doz.	6 00
Delmonico	per doz. \$1 30	28 gauge, 5 inch E. C.		Hand—Wood	50%	Hand Rail	22%
Never Slip	65	28 gauge, 6 inch E. C.		Jack	30%	Lag or Coach—all sizes,	
FAILS.		28 gauge, 7 inch E. C.		gimlet pointed	60%	Saw—Centennial.	
Crate.		30 gauge, 5 inch E. C.		Saw—Centennial.		No.	1 2 3 4
V. & B.	per doz. \$7 25-11 00	30 gauge, 6 inch E. C.		Per doz.	47c 55c 75c 90c	Wood.	
FANS.		30 gauge, 7 inch E. C.		F. H. Bright	82 1/2 & 20%	No. 7, 1/2x1/2, per gross	\$ 55
Cream.		T-Joint Made up.		F. H. Blued	80 & 20%	No. 10, 1/2x1/2 per gross	. 75
14-qt. without gauge,		6-inch	per 100 35 00	F. H. Jap'd	75 & 20%	No. 14, 1/2x1/2 per gross	. 90
18-qt. without gauge,		PLANES.		F. H. Brass	77 1/2 & 30%	SCYTHES.	
20-qt. without gauge,		Stanley Iron Bench	Net	R. H. Brass	75 & 20%	Clipper, Grass	per doz. \$13 50
Sap.		PLIERS.		RIDGE ROLL.		Honest Dutchman	13 00
10-qt., IC Tin	per doz. \$4 00	V. & B. No. 6	each \$0 57	Galvanized.			
12	5 50	" No. 7 Gas	0 60	Crated	70-25%		
STOCK.		" Double Duty 105	0 60	Wired	70-25-5%		
Galv. qts. 14 16 18 20		" Nut No. 3	0 64	Milcor	Net		
Per doz. \$9 75 10 75 12 75 14 50		RINGS AND RINGERS.		REGISTER.			
WATER.		Long Nose Side Cutting.		Cast Iron	30%		
Galvanized qts. 10 12 14		Berg's (Swedish) In. 5	6	Steel and Semi-Steel	50%		
Per doz. \$5 75 6 50 7 25		Blk. Pol. Face, doz.	\$12 25 15 20	Baseboard	50%		
WOOD.		Berg's (Swedish) In. 6	6	Adjustable Ceiling Ventilators	50%		
Cable, 2-Hoop	per doz. Nets	Blk. Pol. Face, doz.	\$8 90 13 35 19 65	Register Faces—Cast and Steel			
Cable, 3-Hoop	" Nets	Flat and Round Nose.		Japanned, Bronzed and Plated.			
Cedar, 3-Hoop, brass	" Nets	Flat, In. 4 6 8		4x6 to 14x14	50%		
DIPPING.		Blk. Pol. Face, doz.	\$8 90 13 35 19 65	Large Register Faces—Cast,	65%		
Common	Nets	Berg's (Swedish)		14x14 to 38x42	70%		
Acme	"	Blk. Pol. Face, doz.	\$11 15 16 30 22 35	Large Register Faces—Steel,			
Boasting.		Round, In. 4 6 8		14x14 to 38x42			
Paxon.		ROPE.		RINGS AND RINGERS.			
No.	1 2 3 4			Full.			
Per doz.	Nets			Copper	2 1/4-in. 3-in.		
Neverburn	"			Per doz.	\$2 40 \$2 65		
Savory, No. 200	per doz. \$8 40			Rea's Improved Self-			

ADVERTISERS' INDEX

The dash (—) indicates that the advertisement does not appear in this issue.

SETS.

Nail.			
Square head.....per doz.	1	34	
Cup point, knurled ..	1	78	
Rivet.			
Farmers'.....per doz.	2	50	
Tinners'.....	5	75	
00-0.....	3	75	

Saw.			
Atkins No. 10.....per doz.	\$2	80	
" No. 12.....	6	20	
Diston's Monarch ..			
No. 2.....	9	90	
Diston's Monarch ..			
No. 12.....	13	20	
Leach's.....	80		
Nash's Hand.....	3	15	
Nash's X-Cut.....	4	20	
Stillman's Lever.....	1	30	
Stillman's X-Cut.....	2	50	
Whiting Pattern.....			
No. 21.....	7	50	
Eccentric.....			
Hand No. 395.....			
N. P. Norrill.....	14	50	

SHEARS.

Nickel Plated, Straight,	6"	\$12	90
" " " " " "	7"	14	85
" " " " " "	8"	16	80
Japanned, Straight.....	6"	11	00
" " " " " "	8"	12	40
" " " " " "	8"	13	80

SHEAVES, SLIDING DOOR.

Common.			
Inches.....	3	4	5
Per set.....	\$1	40	1 75 2 40
Hatfield's.....			
Per set.....	\$1	80	2 10 2 75 2 50

SHINGLES.

Zinc (Illinois).....			
Per Square.....			\$15 00

SHOES.

Conductor.....			60%
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SHOVELS AND SPADES.

Hubbard's			
No.	B	C	D
1	16 00	15 10	14 45
2	16 35	15 60	14 85
3	16 75	16 00	16 25
4	17 10	16 35	16 60
Post Drains & Ditching.			
Hubbard's			
Size	A	B	C
14"	17 15	16 40	15 65
16"	17 50	16 75	16 00
18"	17 85	17 10	16 85
20"	18 20	17 45	16 70
22"	18 55	17 80	17 05
Alaska Steel.			
D-Handle.....per doz.	\$3	50	
Long Handle.....			3 00

SKATES.

Roller.			
Ball Bearing—Boys'.....	\$1	50	
Ball Bearing—Girls'.....	1	60	

SNAPS, HARNESS.

Covered Spring.....	Add	30%	
Judd's Pattern Add.....	\$3	1-6%	to list

SNATHS.

Double Ring Bush.....per doz.	\$	9 75	
Patent Loop, Bush.....		10 00	
Patent Loop, Grass.....		8 75	

SNIPS, TINNERS'.

Clover Leaf.....	40	10%	
National.....	40	10%	
Star.....	50		
Milcor.....	50		

SPRINGS, DOOR.

Perfect.			
No.	2	3	4 5 6 7
Per doz. 45c 50c 55c 65c 80c 90c			
Reliance.			
Light Medium Heavy			
Per doz. \$1 80 2 40 3 75			
Torrey's.....per doz.	1	65	

SPRINKLERS, LAWN.

Stearns No. 1.....per doz.	\$11	50	
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SQUARES.

Steel and Iron.....Net			
(Add for bluing, \$3.00 per doz. net)			
Mitre.....			
Try.....			
Try and Bevel.....			
Try and Miter.....			
Fox's.....per doz.	\$6	00	
Winterbottom's.....	10		

STAPLES.

Blind.			
Barbed.....per lb.	21	@22c	
Butter, Tub.....	16	@19c	
Fence—			
Polished.....per 100 lbs.	\$5	45	
Galvanized.....	6	15	
Netting.			
Galvanized.....per 100 lbs.	6	54	
Wrought.			
Wrought Staples, Hasps and			
Staples, Hasps, Hooks and			
Staples, and Hooks and			
Staples.....50			
Extra heavy.....	35		

STONES.

Are.			
Hindustan.....per lb.	New	Nets	
More Grit.....	"	"	
Washita.....	"	"	

Emery.			
No. 128.....per doz.	New	Nets	

Oil—Mounted.			
Arkansas Hard			
No. 7.....per doz.	New	Nets	
Arkansas Soft			
Washita No. 117 ..	"	"	

Oil—Unmounted.			
Arkansas Hard per lb.	New	Nets	
Arkansas Soft			
Lily White.....	"	"	
Queer Creek.....	"	"	
Washita.....	"	"	

Seythe.			
Black Diamond per gro.	New	Nets	
Crescent.....	"	"	
Green Mountain ..	"	"	
LaMolle.....	"	"	
Extra Quinne- bog	"	"	
Red End.....	"	"	

STOPS, BENCH.

No. 10 Morrill pat-			
tern.....per doz.	\$11	00	
No. 11 Stearns pat-			
tern.....	10	00	
No. 15 Smith pattern ..	7	00	

STOPPERS, FLUE.

Common.....per doz.	\$1	10	
Gem, flat, No. 3.....	1	00	
Gem, No. 1.....	1	10	

STRETCHERS.

Carpet.			
Bullard's.....per doz.	\$3	99	
Excelsior.....	5	25	
Malleable Iron.....	6	20	
Perfection.....	6	20	
King.....	4	50	

Wire.			
O. S. Elwood, No. 1 per doz.	Nets		
O. S. Elwood, No. 2 ..	"		

SWIVELS.

Malleable Iron.....per lb.	\$0	10	
Wrought Steel.....per gro.	4	50	

TACKS.

Bill Posters' 6-oz., 25-lb. boxes			
per lb.....	15c		
Upholsterers' 6-oz., 25-lb.			
boxes, per lb.....	15½c		

TAPES, MEASURING.

Asses' Skin.....List & 40%			
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THERMOMETERS.

Tin Case.....per doz.	80c	\$	1 25
Wood Back.....	\$2	00	12 00
Glass.....			12 00

TIES.

Bale.			
Single Loop, carload			
lots.....	75	& 7%	
Single Loop, less than			
car lots.....	70	& 15%	

TRAPS.

Game with Chains.			
Victor No. 1.....	\$1	83	
Oneida Jump No. 1.....	2	20	
Newhouse No. 1.....	4	83	
Mouse and Rat.			
Sure Catch Mouse Traps.....	\$	3 70	
Vim Mouse Traps.....	3	70	
Short Stop Mouse Traps.....	3	20	
Wood Choker Mouse			
Traps, 4 hole.....	17	00	
Sure Catch Rat Traps.....	16	00	
Vim Rat Traps.....	16	00	
Short Stop Rat Trap.....	15	00	
Dead Easy Rat Traps.....	17	00	
Star Rat Traps.....	50	00	
Erie.....	64	00	
Packed in One Bushel Band Stave			
Baskets.			
List per bushel.			
Sure Catch Mouse Traps			
(360 Traps).....	\$	9 30	
Short Stop Mouse Traps			
(360 Traps).....	8	00	
Sure Catch Rat Traps (64			
Traps).....	6	00	
Short Stop Rat Traps (64			
Traps).....	5	60	
Assorted Mouse and Rat Traps.			
List per bushel			
Sure Catch (216 Mouse			
Traps and 26 Rat Traps) \$	50		
Short Stop (216 Mouse			
Traps and 26 Rat Traps) 7	50		

TROWELS.

Cement.			
Atkins No. 6.....	19	50	
No. 9.....	25	50	
Diston's.....	30		

TUBS, WASH.

Standard, Wood.			
No.	3	2	1 large
Per doz. \$9 50 11 25 12 75			15 50
Galvanized.			
No.	1	2	3
Per doz. ....13 75 15 95 18 60			

Abbott Mfg. Co.....	46		
American Furnace Co.....	4		
American Rolling Mill Co.....	—		
American Steel & Wire Co.....	51		
Ashton Mfg. Co.....	—		
Atkins & Co., E. C.....	—		
Berger Bros. Co.....	47		
Berns Co., Otto.....	48		
Bertsch & Co.....	48		
Black Silk Stove Polish Co.....	9		
Bullard & Gormley Co.....	49		
Burgess Soldering Furnace Co.....	—		
Burton Co., W. J.....	—		
Carr Supply Co.....	3		
Chicago Solder Co.....	45		
Clark & Co., Geo. M.....	—		
Clark-Smith Hardware Co.....	46		
Clayton & Lambert Mfg. Co.....	48		
Cleveland & Buffalo Transit Co.....	6		
Cleveland Castings Pat. Co.....	9		
Clinton Furnace Stove Co.....	—		
Coe's Wrench Co.....	51		
Co-operative Fdy.....	—		
Copper and Brass Research	—		
Association.....	—		
Cornish & Co., J. B.....	51		
Cortright Metal Roofing Co.....	45		
Curtman Mfg. Co., F. L.....	43		
Dieckman Co., Ferdinand.....	—		
Diener Mfg. Co., Geo. W.....	48		
Double Blast Mfg. Co.....	48		
Drels & Krump Mfg. Co.....	48		
Dunning Heating Supply Co.....	—		
Ewert & Kutschied Mfg. Co.....	—		
Fanner Mfg. Co.....	—		
Farguhar Furnace Co.....	2		
Farris Furnace Co.....	—		
Federal Varnish Company.....	50		
Forest City Fdy. & Mfg. Co.....	2		
Fox Furnace Co.....	—		
Friedley-Voshardt Co.....	46		
G. & O. Mfg. Co.....	—		
Geroch Bros. Mfg. Co.....	46		
Gohmann Bros. & Kahler.....	9		
Hall-Neal Furnace Co.....	—		
Harrington & King P'g Co.....	45		
Hart & Cooley Co.....	6		
Haynes.....	—		
Haynes-Langenberg Mfg. Co.....	—		
Heiler Bros. Co.....	—		
Hemp & Co.....	48		
Henry Furnace & Fdy Co.....	—		
Hessler Co., H. E.....	—		
Hess-Snyder Co.....	7		
Hollenden Hotel.....	—		
Hones, Inc., Chas. A.....	—		
Hopson Co., W. C.....	—		
Hussey & Co., C. G.....	46		
Hyfield Mfg. Co.....	—		
Illinois Zinc Co.....	46		
Inland Steel Co.....	45		
Independent Stove Co.....	—		
Kimball Bros. Co.....	43		
Kirk-Latty Mfg. Co.....	9		
Krause Co.....	—		
Lalanc & Grosjean Mfg. Co.....	—		
Lamneck Co., W. E.....	—		

Lennox Furnace Co.....	—		
Lovell Mfg. Co.....	—		
Lupton's Sons Co., David.....	47		
Majestic Co.....	—		
Malleable Iron Range Co.....	—		
Manny Heating Supply Co.....	—		
Maplewood Machinery Co.....	—		
Marshalltown Mfg. Co.....	—		
Mathews Banner Range Co.....	—		
Melbye Bros. Co.....	4		
Messenger & Parks Mfg. Co.....	47		
Meyer & Bro. Co., F.....	—		
Meyer Furnace Co.....	—		
Meyers Mfg. Co., Fred J.....	43		
Michigan Stove Co., The.....	6		
Milwaukee Corr. Co. Front Cover	—		
Monroe Fdy. & Furnace Co.....	—		
Mt. Vernon Furnace & Mfg. Co.....	—		
New Jersey Zinc Co., The.....	—		
Orbon Stove Co.....	—		
Osborn Co., The J. M. & L. A.....	46		
Parker Supply Co.....	—		
Peck, H. E.....	—		
Peerless Fdy. Co.....	—		
Quick Meal Stove Co.....	48		
Quincy Pattern Co.....	9		
Roesch, Geo. E.....	—		
Ross-Gould.....	43		
Scheible-Moncrief Heater Co.....	4		
Schwab & Sons Co., R. J.....	—		
Shaw & Sons Co., The Geo. E.....	—		
Special Chemicals Co.....	—		
Standard Furn. & Supply Co.....	5		
Standard Ventilator Co.....	46		
Stearns Register Co.....	10		
St. Louis Tech. Inst.....	43		
St. Louis Heating Co.....	—		
Sullivan-Gieger Co.....	43		
Sykes Co., The.....	46		
Thatcher Furn. Co.....	—		
Thomas & Armstrong Co.....	—		
Turner Brass Works.....	—		
Tuttle & Bailey Mfg. Co.....	7		
Union Steel Products Co., Ltd.....	—		
Utica Heater Co.....	5		
Vaughan & Bushnell Mfg. Co.....	—		
Vedder Pattern Works.....	9		

CLASSIFIED INDEX

- Ball Ties.**
American Steel & Wire Co., Chicago, Ill.
- Bearings—Damper.**
Parker Supply Co., New York, N. Y.
- Bolts—Stove.**
Kirk-Latty Mfg. Co., Cleveland, Ohio
- Brakes—Cornice.**
Dreis & Krump Mfg. Co., Chicago, Ill.
Maplewood Machinery Co., Chicago, Ill.
- Brushes—Furnace.**
Hardware Specialty Co., Fort Wayne, Ind.
- Brass and Copper.**
Hussey & Co., C. G., Pittsburgh, Pa.
Copper & Brass Research Ass'n., New York, N. Y.
- Builders' Hardware.**
Bullard & Gormley, Chicago, Ill.
- Cans—Garbage.**
Osborn Co., The J. M. & L. A., Cleveland, Ohio
- Castings—Malleable.**
Fanner Mfg. Co., Cleveland, Ohio
- Ceilings—Metal.**
Burton Co., W. J., Detroit, Mich.
Friedley-Voshardt Co., Chicago, Ill.
Hopson Co., W. C., Grand Rapids, Mich.
Milwaukee Corrugating Co., Milwaukee, Wis.
- Chain—Sash.**
Parker Supply Co., New York, N. Y.
- Chaplets.**
Fanner Mfg. Co., Cleveland, Ohio
- Chisels.**
Vaughan & Bushnell Mfg. Co., Chicago, Ill.
- Clips—Damper.**
Carr Supply Co., Chicago, Ill.
Waterloo Register Co., Waterloo, Iowa
- Coal Chutes.**
Peerless Foundry Co., Indianapolis, Ind.
Sykes Co., The, Chicago, Ill.
- Cores—Auto Radiator.**
Curtman Mfg. Co., F. L., Maryville, Mo.
G. & O. Mfg. Co., New Haven, Conn.
Zarco Mfg. Co., New York, N. Y.
- Cornices.**
Burton Co., W. J., Detroit, Mich.
Friedley-Voshardt Co., Chicago, Ill.
Milwaukee Corrugating Co., Milwaukee, Wis.
- Cut-Offs—Rain Water.**
Sullivan-Geiger Co., Indianapolis, Ind.
- Doors—Fire.**
Messenger & Parks Mfg. Co., Aurora, Ill.
- Dry Paste.**
Carr Supply Co., Chicago, Ill.
- Eaves Trough.**
Abbott Mfg. Co., Cleveland, Ohio
Berger Bros. Co., Philadelphia, Pa.
Burton Co., The W. J., Detroit, Mich.
Clark-Smith Hardware Co., Peoria, Ill.
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Milwaukee, Wis.
New Jersey Zinc Co., The, New York, N. Y.
- Elbows and Shoes—Conductor.**
American Rolling Mill Co., Middletown, Ohio
Dieckmann Co., Ferdinand, Cincinnati, Ohio
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Milwaukee, Wis.
- Elevators—Hand and Power.**
Kimball Bros. Co., Council Bluffs, Iowa
- Enamel—Iron.**
Black Silk Stove Polish Works, Sterling, Ill.
- Enamel Ware.**
Lalanc & Grosjean Mfg. Co., Chicago, Ill.
- Enamels—Wood.**
Cornish & Co., J. B., Chicago, Ill.
Federal Varnish Co., Chicago, Ill.
- Fence Gates.**
American Steel & Wire Co., Chicago, Ill.
- Fenders.**
Meyers Mfg. Co., Fred J., Hamilton, Ohio
- Files.**
Heller Bros. Co., Newark, N. J.
- Furnace Rings.**
Walworth Run Fdy. Co., Cleveland, Ohio
- Garages—Metal.**
Thomas & Armstrong Co., The, London, Ohio
- Grates—Camp.**
Union Steel Products Co., Albion, Mich.
- Guards—Fire.**
Meyers Mfg. Co., Fred J., Hamilton, Ohio
- Hammers.**
Vaughan & Bushnell Mfg. Co., Chicago, Ill.
- Handles—Boiler.**
Berger Bros. Co., Philadelphia, Pa.
- Handles—File.**
Parker Supply Co., New York, N. Y.
- Hangers—Eaves Trough.**
W. C. Hopson Co., Grand Rapids, Mich.
- Heaters—Combination Hot Water.**
Melbye Bros. Co., Chicago, Ill.
- Heaters—School Room.**
Haynes-Langenberg Mfg. Co., St. Louis, Mo.
Meyer Furnace Co., Peoria, Ill.
Monroe Fdy. & Furnace Co., Monroe, Mich.
Peerless Foundry Co., Indianapolis, Ind.
Standard Furnace & Supply Co., Omaha, Neb.
- Heaters—Warm Air.**
American Furnace Co., St. Louis, Mo.
Carr Supply Co., Chicago, Ill.
Dunning Heating Supply Co., Milwaukee, Wis.
Farquhar Furnace Co., The, Wilmington, Ohio
Farris Furnace Co., Springfield, Ill.
Forest City Fdy. & Mfg. Co., Cleveland, Ohio
Fox Furnace Co., Elyria, Ohio
Haynes-Langenberg Mfg. Co., St. Louis, Mo.
Henry Furnace & Fdy. Co., Cleveland, Ohio
Hess-Snyder Co., Massillon, Ohio
Independent Stove Co., Owosso, Mich.
Kruse Co., Indianapolis, Ind.
- Heaters—Warm Air—Continued.**
Lamneck Co., W. E., Columbus, Ohio
Lennox Furnace Co., Marshalltown, Iowa
Mahoning Fdy. Co., Youngstown, Ohio
Manny Heating Supply Co., Chicago, Ill.
Meyer Furnace Co., Peoria, Ill.
Michigan Stove Co., The, Detroit, Mich.
Monroe Fdy. & Furnace Co., Monroe, Mich.
Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Illinois
Orbon Stove Co., Bellville, Illinois
Peerless Foundry Co., Indianapolis, Ind.
Scheible-Moncrief Heater Co., Cleveland, Ohio
Schwab & Sons Co., R. J., Milwaukee, Wis.
Standard Furnace & Supply Co., Omaha, Neb.
St. Louis Heating Co., St. Louis, Mo.
Utica Heater Co., Utica, N. Y.
Waterloo Register Co., Waterloo, Iowa
- Horse Shoes.**
American Steel & Wire Co., Chicago, Ill.
- Humidifiers.**
Haynes, Kansas City, Mo.
- Indoor Closet.**
Independent Reg. & Mfg. Co., Cleveland, Ohio
- Jobbers—Hardware.**
Bullard & Gormley Co., Chicago, Ill.
Clark-Smith Hardware Co., Peoria, Ill.
- Kitchen Utensils.**
Lalanc & Grosjean Mfg. Co., Chicago, Ill.
- Ladders.**
Walchli Mfg. Co., St. Louis, Mo.
- Lath—Expanded Metal.**
Milwaukee Corrugating Co., Milwaukee, Wis.
- Machines—Crimping.**
Bertsch & Co., Cambridge City, Ind.
- Machinery—Culvert.**
Bertsch & Co., Cambridge City, Ind.
- Machines—Razor Blades.**
Hyfield Mfg. Co., New York, N. Y.
- Machines—Stove Pipe.**
Hemp & Co., St. Louis, Mo.
- Machines—Tinsmiths'.**
Bertsch & Co., Cambridge City, Ind.
Dreis & Krump Mfg. Co., Chicago, Ill.
Ewert & Kutscheid Mfg. Co., Chicago, Ill.
Hemp & Co., St. Louis, Mo.
Maplewood Machinery Co., Chicago, Ill.
Marshalltown Mfg. Co., Marshalltown, Iowa
Whitney Mfg. Co., W. A., Rockford, Ill.
Whitney Metal Tool Co., Rockford, Ill.
- Mailing Lists.**
Ross-Gould, St. Louis, Mo.
- Metals—Perforated.**
Harrington & King Perforating Co., Chicago, Ill.
- Miters.**
Friedley-Voshardt Co., Chicago, Ill.
- Nails—Slatting.**
Hussey & Co., C. G., Pittsburgh, Pa.
- Nails—Wire.**
American Steel & Wire Co., Chicago, Ill.
- Ornaments—Sheet Metal.**
Friedley-Voshardt Co., Chicago, Ill.
Gerock Bros. Mfg. Co., St. Louis, Mo.
- Patterns—Furnace and Stove.**
Cleveland Castings Pattern Co., Cleveland, Ohio
Quincy Pattern Co., Quincy, Ill.
Shaw & Son Co., The Geo. E., Cleveland, Ohio
Vedder Pattern Works, Troy, N. Y.
- Pencils.**
Eagle Pencil Co., New York, N. Y.
- Pipe and Fittings—Furnace.**
Carr Supply Co., Chicago, Ill.
Dunning Heating Supply Co., Milwaukee, Wis.
Henry Furnace & Fdy. Co., Cleveland, Ohio
Lamneck Co., W. E., Columbus, Ohio
Manny Heating Supply Co., Chicago, Ill.
Meyer & Bro. Co., F., Peoria, Ill.
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Standard Furnace & Supply Co., Omaha, Neb.
- Pipe and Fittings—Stove.**
Hemp & Co., St. Louis, Mo.
Meyer & Bro. Co., F., Peoria, Ill.
Sullivan-Geiger Co., Indianapolis, Ind.
- Pipe—Conductor.**
Berger Bros. Co., Philadelphia, Pa.
Burton Co., W. J., Detroit, Mich.
Clark-Smith Hdw. Co., Peoria, Ill.
Dieckmann Co., Ferdinand, Cincinnati, Ohio
Friedley-Voshardt Co., Chicago, Ill.
Hussey & Co., C. G., Pittsburgh, Pa.
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Milwaukee, Wis.
New Jersey Zinc Co., The, New York, N. Y.
- Polish—Metal and Stove.**
Black Silk Stove Polish Works, Sterling, Ill.
- Posts—Steel Fence.**
American Steel & Wire Co., Chicago, Ill.
- Punches.**
Bertsch & Co., Cambridge City, Ind.
Whitney Mfg. Co., W. A., Rockford, Ill.
Whitney Metal Tool Co., Rockford, Ill.
- Punches—Combination Bench and Hand.**
Parker Supply Co., New York, N. Y.
- Punches—Hand.**
Parker Supply Co., New York, N. Y.
- Quadrants—Damper.**
Parker Supply Co., New York, N. Y.
- Racks—Canning.**
Union Steel Products Co., Albion, Mich.
- Racks—Stove.**
Union Steel Products Co., Albion, Mich.
- Radiator Hoods and Shells—Ford.**
Messenger & Parks Mfg. Co., Aurora, Ill.
- Ranges—Combination Gas & Coal.**
American Stove Co., St. Louis, Mo.
Independent Stove Co., Owosso, Mich.
Malleable Iron Range Co., Beaver Dam, Wis.
Matthews Banner Range Co., South Bend, Ind.
Quick Meal Stove Co., St. Louis, Mo.
- Ranges—Gas.**
American Stove Co., St. Louis, Mo.
Clark & Co., Geo. M., Chicago, Ill.
Dangler Stove Co., Cleveland, O.
Matthews Banner Range Co., South Bend, Ind.
Quick Meal Stove Co., St. Louis, Mo.

Rasps.
Heller Bros., Newark, N. J.

Register Shields.
Hall-Neal Furnace Co., Indianapolis, Ind.

Registers—Warm Air.
Carr Supply Co., Chicago, Ill.
Dunning Heating Supply Co., Milwaukee, Wis.

Hart & Cooley Co., New Britain, Conn.
Henry Furnace & Fdy. Co., Cleveland, Ohio
Majestic Co., Huntington, Ind.
Manny Heating Supply Co., Chicago, Ill.

Rock Island Register Co., Rock Island, Ill.
Standard Furnace & Supply Co., Omaha, Neb.

Stearns Register Co., Detroit, Mich.
Tuttle & Bailey Mfg. Co., Chicago, Ill.
Walworth Run Fdy. Co., Cleveland, Ohio

Waterloo Register Co., Waterloo, Iowa

Regulators—Damper.
Parker Supply Co., New York, N. Y.

Repair Parts—Auto Radiator.
Curfman Mfg. Co., F. L., Maryville, Mo.
G. & O. Mfg. Co., New Haven, Conn.

Repairs—Stove & Furnace.
Hessler Co., H. E., Syracuse, N. Y.

Ridging.
American Rolling Mill Co., Middletown, Ohio

Rivets—Stove.
Kirk-Latty Mfg. Co., Cleveland, Ohio

Roasters.
Lalance & Grosjean Mfg. Co., Chicago, Ill.

Rod Clips—Damper.
Parker Supply Co., New York, N. Y.

Rods—Stove.
Kirk-Latty Mfg. Co., Cleveland, Ohio

Rolls—Forming.
Bertsch & Co., Cambridge City, Ind.

Roof—Flashing
Hessler Co., H. E., Syracuse, N. Y.

Roofing—Iron and Steel.
American Rolling Mill Co., Middletown, Ohio
Burton Co., W. J., Detroit, Mich.
Cortright Metal Roofing Co., Philadelphia, Pa.
Friedley-Voshardt Co., Chicago, Ill.

Milwaukee Corrugating Co., Milwaukee, Wis.
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Inland Steel Co., Chicago, Ill.
Sykes Co., The Chicago, Ill.

Roofing—Zinc.
Illinois Zinc Co., New York, N. Y.
New Jersey Zinc Co., The, New York, N. Y.

Rubbish Burners.
Hart & Cooley Co., New Britain, Conn.

Saws.
Atkins & Co., Inc., E. C., Indianapolis, Ind.

Schools—Sheet Metal Trades.
Zideck School of Sheet Metal Trades, New York, N. Y.

Schools—Sheet Metal Pattern Drafting.
St. Louis Technical Institute, St. Louis, Mo.
Zideck Auto Radiator School, New York, N. Y.

Schools—Automobile Radiator Repairing.
Zideck Auto Radiator School, New York, N. Y.

Screens—Perforated Metal.
Harrington & King Perforating Co., Chicago, Ill.

Screws—Sheet Metal.
Parker Supply Co., New York, N. Y.

Screw Drivers.
North Bros. Mfg. Co.,

Shears—Hand and Power.
Philadelphia, Pa.
Ewert & Kutscheld Mfg. Co., Chicago, Ill.
Marshalltown Mfg. Co., Marshalltown, Iowa
Viking Shear Co., Erie, Pa.

Sheets—Asbestos
Manny Heating Supply Co., Chicago, Ill.

Sheets—Black and Galvanized.
American Rolling Mill Co., Middletown, Ohio
Inland Steel Co., Chicago, Ill.
Osborn, The J. M. & L. A., Cleveland, Ohio
Sykes Co., The Chicago, Ill.

Sheets—Iron.
American Rolling Mill Co., Middletown, Ohio

Shields—Radiator.
Thomas & Armstrong Co., The London, Ohio

Shingles—Zinc.
Illinois Zinc Co., New York, N. Y.

Sifters—Ash.
Diener Mfg. Co., G. W., Chicago, Ill.

Sifters—Flour.
Meyers Mfg. Co., Fred J., Hamilton, Ohio

Sky Lights.
Burton Co., W. J., Detroit, Mich.
Messinger & Parks Mfg. Co., Aurora, Ill.
Sykes Co., The Chicago, Ill.

Smoke Pipe—Cast Iron.
Manny Heating Supply Co., Chicago, Ill.
Waterloo Register Co., Waterloo, Iowa

Solder.
Chicago Solder Co., Chicago, Ill.

Soldering Furnaces.
Ashton Mfg. Co., Newark, N. J.
Bernz Co., Otto, Newark, N. J.
Burgess Soldering Furnace Co., Columbus, Ohio
Clayton & Lambert Mfg. Co., Detroit, Mich.
Diener Mfg. Co., G. W., Chicago, Ill.

Double Blast Mfg. Co., North Chicago, Ill.
Hones, Inc., Chas. A., Baldwin, Long Island, N. Y.
Quick Meal Stove Co., St. Louis, Mo.
Turner Brass Works, Sycamore, Ill.

Specialties—Hardware.
Atkins & Co., Inc., E. C., Indianapolis, Ind.
Bullard & Gormley, Chicago, Ill.
Diener Mfg. Co., G. W., Chicago, Ill.

Hardware Specialty Co., Fort Wayne, Ind.
Heller Bros. Co., Newark, N. J.
Hessler Co., H. E., Syracuse, N. Y.
Hyfield Mfg. Co., New York, N. Y.
Lovell Mfg. Co., Erie, Pa.
Parker Supply Co., New York, N. Y.
Vaughan & Bushnell Mfg. Co., Chicago, Ill.
Walchli Mfg. Co., St. Louis, Mo.

Sporting Goods.
Bullard & Gormley, Chicago, Ill.

Stains—Oil and Acid.
Federal Varnish Co., Chicago, Ill.

Stars—Hard Iron Cleaning.
Fanner Mfg. Co., Cleveland, Ohio

Statuary.
Friedley-Voshardt Co., Chicago, Ill.
Gerock Bros. Mfg. Co., St. Louis, Mo.

Stoves—Camp.
Quick Meal Stove Co., St. Louis, Mo.
Union Steel Products Co., Albion, Mich.

Stoves—Gasoline and Kerosene.
American Stove Co., St. Louis, Mo.
Clark & Co., Geo. M., Chicago, Ill.
Dangler Stove Co., Cleveland, O.
Quick Meal Stove Co., St. Louis, Mo.

Stoves and Ranges.
American Stove Co., St. Louis, Mo.
Clark & Co., Geo. M., Chicago, Ill.
Clinton Furnace Stove Co., Clinton, Ind.
Copper Clad Malleable Range Co., St. Louis, Mo.

Dangler Stove Co., Cleveland, O.
Gohman Bros. & Kahler, New Albany, Ind.
Independent Stove Co., Owosso, Mich.
Jungers Stove & Range Co., Grafton, Wis.
Malleable Iron Range Co., Beaver Dam, Wis.
Michigan Stove Co., The, Detroit, Mich.
Orbon Stove Co., Belleville, Ind.
Quick Meal Stove Co., St. Louis, Mo.

Stove Pipe Reducer.
Sullivan-Gelger Co., Indianapolis, Ind.

Tacks, Staples, Spikes.
American Steel & Wire Co., Chicago, Ill.

Tiles and Shingles—Metal.
Burton Co., W. J., Detroit, Mich.
Cortright Metal Roofing Co., Philadelphia, Pa.
Hopson Co., W. C., Grand Rapids, Mich.
Illinois Zinc Co., New York, N. Y.
Milwaukee Corrugating Co., Milwaukee, Wis.
Thomas & Armstrong Co., The, London, Ohio

Tinplate.
Osborn Co., The J. M. & L. A., Cleveland, Ohio

Tin—Perforated.
Harrington & King Perforating Co., Chicago, Ill.

Tools—Auto Repair.
Curfman Mfg. Co., F. L., Maryville, Mo.

Tools—Carpenter.
Atkins & Co., Inc., E. C., Indianapolis, Ind.
Vaughan & Bushnell Mfg. Co., Chicago, Ill.

Tools—Tin Smith's.
Bertsch & Co., Cambridge City, Ind.
Dreis & Krump Mfg. Co., Chicago, Ill.
Ewert & Kutscheld Mfg. Co., Chicago, Ill.
Hopson Co., W. C., Grand Rapids, Mich.
Maplewood Machinery Co., Chicago, Ill.
Marshalltown Mfg. Co., Marshalltown, Iowa
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Vaughan & Bushnell Mfg. Co., Chicago, Ill.
Viking Shear Co., Erie, Pa.
Whitney Mfg. Co., W. A., Rockford, Ill.
Whitney Metal Tool Co., Rockford, Ill.

Torches.
Ashton Mfg. Co., Newark, N. J.
Bernz Co., Otto, Newark, N. J.
Burgess Soldering Furnace Co., Columbus, Ohio
Clayton & Lambert Mfg. Co., Detroit, Mich.
Diener Mfg. Co., G. W., Chicago, Ill.
Double Blast Mfg. Co., North Chicago, Ill.
Hones, Inc., Chas. A., Baldwin, Long Island, N. Y.
Quick Meal Stove Co., St. Louis, Mo.
Turner Brass Works, Sycamore, Ill.

Transit Companies.
Cleveland & Buffalo Transit Co., Cleveland, Ohio

Trimnings—Stove.
Fanner Mfg. Co., Cleveland, Ohio

Valves—Humidifier.
Haynes, Kansas City, Mo.

Varnishes.
Cornish & Co., J. B., Chicago, Ill.
Federal Varnish Co., Chicago, Ill.

Ventilators.
Berger Bros. Co., Philadelphia, Pa.
Friedley-Voshardt Co., Chicago, Ill.
Messenger & Parks Mfg. Co., Aurora, Ill.
Milwaukee Corrugating Co., Milwaukee, Wis.
Standard Ventilator Co., Lewisburg, Pa.
Thomas & Armstrong Co., The, London, Ohio

Ventilators—Ceiling.
Hart & Cooley Co., New Britain, Conn.

Henry Furnace & Fdy. Co., Cleveland, Ohio
Tuttle & Bailey Mfg. Co., New York

Water Heaters—Oil Burning.
Dangler Stove Co., Cleveland, O.

Wire.
American Steel & Wire Co., Chicago, Ill.

Wrenches.
Coes Wrench Co., Worcester, Mass.

Wringers—Clothes.
Lovell Mfg. Co., Erie, Pa.

Zinc.
Illinois Zinc Co., New York, N. Y.
New Jersey Zinc Co., The, New York, N. Y.

Zinc—Slab.
Illinois Zinc Co., New York, N. Y.

WANTS AND SALES

For paid yearly subscribers, **AMERICAN ARTISAN AND HARDWARE RECORD** will insert under this head advertisements of not more than fifty words **WITHOUT CHARGE**. Employers wishing to secure employes, parties desiring to purchase or sell business, secure partners, or to exchange, etc., will find that these pages offer excellent opportunities to satisfy their wants. Clerks and tinsmiths looking for situations will find it to their advantage to use these columns. Those who respond to these announcements please mention that they "READ THE ADVERTISEMENT IN AMERICAN ARTISAN AND HARDWARE RECORD."

BUSINESS CHANCES

Lightning Rods—Sell our famous Copper Cable and Section Rods—endorsed and labeled by Underwriter's Laboratories. Special Patented One Piece Air Terminals—and many other exclusive features with Rock Bottom Prices. Don't do all the hard work and let your competitor put on the rods. Write today for agency. **L. K. DIDDIE CO.**, Marshfield, Wis.

For Sale or Rent—Good tin shop with good tools of all kinds. Some stock. Will sell stock and rent tools. **E. R. Gardner**, Monticello, Indiana. 1-3t

Wanted—To exchange a good farm, well improved, on good road, 3 miles from town, for established hardware business. Address Box 252, Pierceton, Indiana. 25-3t

For Sale—Tin shop, also equipped for radiator repairing, in town of 20,000 population. Anyone interested inquire of Cecil Minor, 313 North Main Street, Hannibal, Missouri. 24-3t

For Sale—Patent rights for adjustable flue and ventilator base. Fits any pitched roof. Can be carried in stock by hardware dealers as any one can erect it. Address B-36, care of **AMERICAN ARTISAN**, 620 So. Michigan Avenue, Chicago. 24-3t

For Sale—Tin radiator and plumbing shop fully equipped with tools. Good town with population of 3,000. Only shop there, and do a good business, but must sell on account of other interests. Address B-40, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago. 25-3t

For Sale—Portable Bake, Japanning and Enameling Oven business; also sheet metal work. Established 35 years. 20 years at present location. Ovens sold all over the United States. Best chance for live party. Address B-43, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago. 1-3t

For Sale—Sheet metal shop, hardware, gas, electric supplies. Will sell at inventory (about \$3,000). Good chance for young or middle aged man with pep. Portable garage and auto for sale if desired. Business is located at 11821 Euclid Avenue, Cleveland, Ohio, the main street of city. Address Wall Mfg. Co., that address. 25-3t

For Sale—Strictly up to date sheet metal roofing and radiator shop. Only shop of any importance in town of 8,000. Best town in Northeastern Colorado. Will sell all or half interest. This is not a cheap proposition but one worth while. Address B-28, care of **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 22-3t

For Sale—Good sheet metal and roofing shop with full equipment for handling No. 10 and lighter iron. Best town in East Central Illinois. Lots of building here. Fine opportunity for party or parties used to running a large shop. Will invoice from \$5,000 to \$7,000. Reason for selling, disagreement of partners. Have been established 12 years. Address B-44, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago. 1-3t

HELP WANTED

Wanted—To hear from owner of good hardware store for sale. State cash price, description. **D. F. Bush**, Minneapolis, Minnesota. 1-1t

Wanted—Good all around tinner and furnace man for steady job. Address **J. H. Barnett**, Dodge City, Kansas. 24-3t

Wanted—Two first class sheet metal workers. Wages \$1 per hour. **Mehl Bros.**, 807 Union Street, Coffeyville, Kansas. 1-3t

Wanted—Experienced steam fitter or plumber. For particulars address **White Plumbing and Heating Co.**, Charleston, Illinois. 1-3t

Wanted—Present address of **George Corblls**, tinner, formerly with **Ohio Heating Co.**, Columbus, Ohio. Address **Ideal Furnace Co.**, 660 Third Street, Milwaukee, Wisconsin. 25-3t

Wanted—Tinner, plumber and radiator man. Steady position for first class man. State wages wanted and experience in first letter. **Denkman Hardware Co.**, Geddes, South Dakota. 1-3t

Wanted—All around hardware clerk. Must be able to help out in tinshop. State wages expected and send references. Give age and nationality. Address **H. O. Ebert**, Preston, Minnesota. 24-3t

Wanted—Experienced furnace man. One who can lay out, figure, sell and install furnaces. This is a real job for the right man. Address **O. H. Bergeman**, 109 Clinton Street, Wausau, Wisconsin. 1-3t

Wanted—Foreman to take charge of good shop, must be fast and know how to handle men. This is a good thing for the right man. Answer at once, stating all particulars in first letter. Address **Dominion Metal Products Co.**, Roanoke, Virginia. 24-3t

Wanted—First class sheet metal mechanic. Must be reliable and competent. Experience in slate and tile roofing absolutely necessary. Good opportunity for right man. Address B-33, care **AMERICAN ARTISAN AND HARDWARE RECORD**, 620 S. Michigan Av., Chicago. 23-3t

Wanted—Experienced Furnace Fitting and Furnace salesman who can lay out and figure jobs. Wisconsin territory. State previous experience and for whom now working or last employer, in first letter. Address B-35, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago. 24-3t

Wanted—Experienced hardware salesman, capable of acting as Assistant Manager of retail store. Must be able to supervise salesmen and general arrangement and display of store. Southern Wisconsin location. Address B-34, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago. 24-3t

Wanted—At Once—First class plumber to work on plumbing installations in schools and public buildings. Very desirable work. Nine hour day, union or non-union, good wages, steady work. Must have Illinois license. Write or phone at once. Address **Arthur W. Murray Co.**, Hoopeston, Illinois. 24-3t

SITUATION WANTED

Situation Wanted—By a plumber and steam fitter, who can also install warm air furnaces and do some tin work. Twenty years' experience. Address B-37, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago. 25-3t

Situation Wanted—By tinner and furnace man. Have had ten years' experience. Can also do radiator work. Married and want steady employment. State wages and particulars in first letter. Address **L. W. Hoffman**, Green Lake, Wisconsin. 25-3t

Situation Wanted—As superintendent of large jobbing shop, or large sheet metal factory. Competent to handle large plant—metal stamping tool and die work, piece work systems, automotive metal work, ventilating, estimating and designing. Furnace fittings, registers, enamelling and plating. Long record as an executive in several cities and large plants. State conditions and requirements. Address B-38, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago. 25-3t

SITUATION WANTED

Wanted—Situation wanted as tinner with knowledge of plumbing. Can invest some money if conditions are right. Address B-41, care **AMERICAN ARTISAN**, 620 S. Michigan Ave., Chicago. 25-3t

Wanted—All sheet metal worker wants situation as foreman in shop. Has had 5 years of drafting room work, and wide experience in heating and ventilating. Address B-32, care **AMERICAN ARTISAN AND HARDWARE RECORD**, 620 South Michigan Avenue, Chicago. 23-3t

Situation Wanted—As working foreman with 25 years' experience at tinning and sheet metal work in all its branches. Prefer the south. Am considered an All mechanic and know how to handle a live shop. Address **George Collins**, 415 4th Street, N. W., Washington, D. C. 24-3t

Situation Wanted—Erecting superintendent on exhaust systems, ventilating systems. Ten years' experience as superintendent, designer and salesman. All around mechanic and can handle men. Salary no object as want to connect with live firm who can get business. First class references. Address B-39, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago. 25-3t

TINNERS' TOOLS

For Sale—5 new No. 218 Red Star Vapor oil stoves at \$44.00, f. o. b. Albion. Address **A. E. Browder**, Albion, Nebraska. 25-3t

For Sale—8 foot cornice brake—**Dreis & Krump**. A No. 1 condition. Price very reasonable. Address **L. E. Rochex**, Rockwell City, Iowa. 24-3t

For Sale—Full set Tinnners' tools and machines. Will sell all or separate. Address **C. H. Weyrich**, 105 Dilworth Avenue, San Antonio, Texas. 24-3t

For Sale—One 18 foot brake and one No. 2 Lever Whitney Punch in good condition, cheap for cash. Address **H. A. Duncan**, 726 North Eway, Dallas, Texas. 1-3t

For Sale or Trade—Tinnners' tools, 10 acres of good land near Mancelonia, Michigan. Will not refuse a fair offer. **W. L. Mallory**, 219 Falls St., Cuyahoga Falls, Ohio. 25-3t

Wanted—A set of Tinnners' tools. Give itemized list, full details and price with physical conditions of tools and their make by return mail. Address **Guenther Hardware Co.**, Owensboro, Kentucky. 25-3t

For Sale—One Niagara 42" curved foot shear, with blades for cutting 6", 7", 8", 9", 10" and 12" four piece elbows. Entire equipment in excellent condition. Address **Messenger & Parks Mfg. Co.**, Aurora, Illinois. 25-3t

SPECIAL NOTICES

Special Notices—displayed want ads—are charged at the rate of \$3.00 per inch per insertion.

PATENTS
HUBERT E. PECK
Patent Attorney
Pacific Building, WASHINGTON, D. C.

WANTED

Shop foreman for sheet metal shop—heavy sheet metal and light plate work. A man capable of laying out his own work, estimating and taking complete charge. Address D-25, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago. 1-1t